On the Cover

“A Monograph of the Trochilidae of the family of the hummingbirds by John Gould in 1861. John Gould (1804-1881) was a well known English artist and ornithologist. This book contains illustrations that required hours of labor, especially in the application of gold leaf, transparent paint, lacquer and gum arabic to capture the iridescence of the birds’ feathers.”

Photo and caption credit (via Creative Commons): Perot Museum of Nature and Science, Dallas, TX, https://www.flickr.com/photos/drriss/15094741168

Columns and Reports
From the Editor ........................................... 5
SciTech News Call for Articles .......................... 5
Conference Report, Diane K. Foster
International Student Travel Award Recipient .............. 8
Conference Report, S. Kirk Cabeen
Travel Stipend Award Recipient ....................... 9
Conference Report, Bonnie Hilditch
International Librarian Award Recipient .................. 11
Conference Report, IEEE Continuing Education Award Recipient ........ 19

Division News
Science-Technology Division .......................... 6
Chemistry Division ....................................... 14
Engineering Division ................................. 17

Call for Nominations & Applications
Bonnie Hilditch International Librarian Award ........... 13
IEEE Continuing Education Stipend .................... 20
Engineering Librarian of the Year Award ............. 21
SPIE Digital Library Student Travel Stipend .............. 22

Reviews
Sci-Tech Book News Reviews ......................... 23

Advertisements
Annual Reviews ......................................... 3
IEEE ........................................................ 4

Copy Deadline
Issue Number 1 .................. Feb 1
Issue Number 2 ................. April 1
Issue Number 3 ................. Aug 1
Issue Number 4 ............... Nov 1
SCITECH NEWS (ISSN 0036-8059) is published quarterly (March, May, September, December) by the Chemistry, Engineering, and the Science-Technology Divisions, the Aerospace Section of the Engineering Division, and the Materials Research and Manufacturing Section of the Chemistry Division of the Special Libraries Association, 132 Hemingway Place, Georgetown, KY, 40324, (859) 539-5810.

Publication Policy: SciTech News is the official bulletin of the Chemistry, Engineering, Science-Technology Divisions, the Aerospace Section of the Engineering Division, and the Materials Research and Manufacturing Section of the Chemistry Division of the Special Libraries Association. The contents of articles and editorials are not to be construed as being or representing the official position of the sponsoring divisions.

Disclaimer: Special Libraries Association assumes no responsibility for the statements and opinions advanced by the contributors to the Association’s publications. Editorial views do not necessarily represent the official position of the Special Libraries Association. Acceptance of an advertisement does not imply endorsement of the product by the Special Libraries Association.

Manuscripts: The Editor solicits papers of interest to the community of science and technology-oriented special libraries. Manuscripts of articles should be sent via E-mail (Microsoft Word or Plain Text format) to jcusker4031@gmail.com.

Subscriptions: Special Libraries Association members in the Chemistry, Engineering, Science-Technology Divisions, the Aerospace Section of the Engineering Division and the Materials Research and Manufacturing Section of the Chemistry Division automatically receive subscriptions to SciTech News. Their annual subscription fee of $1.00 is paid from their annual dues to the Special Libraries Association.

Offices: SciTech News, c/o Editor, Jeremy Cusker, 103B Carpenter Hall, Cornell University, Ithaca, NY, 14851. jcusker4031@gmail.com. Business Manager, Nevenka Zdravkovska, University of Maryland, 1403J Mathematics Bldg, College Park, MD 20742-7011, (301) 405-9144, nevenka@umd.edu.
ANNUAL REVIEWS
It’s about time. Your patron's time. It’s time well spent.

Now Available from Annual Reviews:
Annual Review of Virology
virology.annualreviews.org • Volume 1 • September 2014

Editor: Lynn W. Enquist, Princeton University

The Annual Review of Virology will capture and communicate exciting advances in the understanding of viruses of animals, plants, bacteria, archaea, fungi, and protozoa. Reviews will highlight new ideas and directions in basic virology, viral disease mechanisms, virus-host interactions, and cellular and immune responses to virus infection, and will reinforce the position of viruses as uniquely powerful probes of cellular function.

TABLE OF CONTENTS:
• An Ounce of Prevention Is Worth a Pound of Cure: Improving AAV-Mediated Gene Therapy for Research and Therapeutic Purposes, R. Jude Samulski, Nicholas Muzyczka
• Archaeal Viruses: Diversity, Replication, and Structure, Nikki Della, Jamie C. Snyder, Benjamin Bolduc, Mark J. Young
• Autobiographical Article, C.J. Peters
• Balance and Stealth: The Role of Noncoding RNAs in the Regulation of Virus Gene Expression, Jennifer E. Cox, Christopher S. Sullivan
• Cytoplasmic RNA Granules and Viral Infection, Wei-Chih Tsai, Richard E. Lloyd
• Glycan Engagement by Viruses: Receptor Switches and Specificity, Luisa J. Ströh, Thilo Stehle
• Herpesvirus Genome Integration into Telomeric Repeats of Host Cell Chromosomes, Nikolaus Osterrieder, Nina Wallaschek, Benedikt B. Kaufer
• Human Cytomegalovirus: Coordinating Cellular Stress, Signaling, and Metabolic Pathways, Thomas Shenk, James C. Alwine
• IFITM-Family Proteins: The Cell's First Line of Antiviral Defense, Charles C. Bailey, Guocai Zhong, I-Chueh Huang, Michael R. Farzan
• In Vitro Assembly of Retroviruses, Di L. Bush, Volker M. Vogt
• Inventing Viruses, William C. Summers
• Live Cell Imaging of Retroviral Entry, Amy E. Hulme, Thomas J. Hope
• Mechanisms of Virus Membrane Fusion Proteins, Margaret Kielian
• Naked Viruses That Aren’t Always Naked: Quasi-Enveloped Agents of Acute Hepatitis, Zongdi Feng, Asuka Hirai-Yuki, Kevin L. McKnight, Stanley M. Lemon
• New Methods in Tissue Engineering: Improved Models for Viral Infection, Vyas Ramanan, Margaret A. Scull, Timothy P. Sheahan, Charles M. Rice, Sangeeta N. Bhatia
• Oncolytic Poxviruses, Winnie M. Chan, Grant McFadden
• Paroviruses: Small Does Not Mean Simple, Susan F. Cotmore, Peter J. Tattersall
• PHIRE and TViV: Experiences in Bringing Virology to New Audiences, Graham F. Hatfull, Vincent Racaniello
• Polydnaviruses: Nature’s Genetic Engineers, Michael R. Strand, Gaelen R. Burke
• Remarkable Mechanisms in Microbes to Resist Viral Infections, Ron L. Dy, Corinna Richter, George P.C. Salmond, Peter C. Fineran
• Role of the Vector in Arbovirus Transmission, Michael J. Conway, Tonya Colpitts, Erol Fikrig
• The Impact of Mass Spectrometry-Based Proteomics on Fundamental Discoveries in Virology, Todd M. Greco, Benjamin A. Diner, Iléana M. Cristea
• The Placenta as a Barrier to Viral Infections, Elizabeth Delorme-Axford, Yael Sadovsky, Carolyn B. Coyne
• Thinking Outside the Triangle: Replication Fidelity of the Largest RNA Viruses, Everett Clinton Smith, Nicole R. Sexton, Mark R. Denison
• Three-Dimensional Imaging of Viral Infections, Cristina Risco, Isabel Fernández de Castro, Laura Sánchez-Sánchez, Kedar Narayan, Giovanna Grandetti, Sriram Subramaniam
• Vaccine Development as a Means to Control Dengue Virus Pathogenesis: Do We Know Enough? Theodore C. Pierson, Michael S. Diamond
• Viral Manipulation of Plant Host Membranes, Jean-François Laliberté, Huanquan Zheng
• Viruses and the DNA Damage Response: Activation and Antagonism, Micah A. Luftig
• Viruses and the Microbiota, Christopher M. Robinson, Julie K. Pfeiffer

Complimentary online access to the first volume will be available until September 2015.
From the Editor

Jeremy Cusker

Another year comes to a close. Among the projects I most enjoyed participating in 2014 was Bill Jacobs’ effort to bring the history of the Science-Technology Division up to date by compiling its history after the early 1970s. A history going back from then to 1923 already existed (http://scitech.sla.org/about-the-division/division-early-history/) based on information from the Encyclopedia of Library and Information Sciences among other sources.

Those of us who agreed to participate used the back issues of SciTech News as our primary sources. I was assigned most of the 1970s. As editor, I’ve always been a bit nervous about whether the publication was ‘living up’ to the standards established by those who came before me. Certainly it was humbling to see just how much ‘by-hand’ indexing and bibliographic work was done by previous generations of librarians. But in general I came away from my reading with a feeling that SciTech News has indeed remained a high-quality information source, even as the profession of librarianship has dramatically changed.

With the project completed, I highly recommend that anyone interested in seeing this new, compiled history of our division take a look at it here: http://scitech.sla.org/division-modern-history/.

What have you been doing lately?

SciTech News wants to know! Please send us information about your awards, promotions, professional publications and presentations or other recognition. We’ll publish your activities in SciTech News, bringing your news of our members’ accomplishments to the wider SLA and library communities.

Send such information to Jeremy Cusker, jcusker4031@gmail.com by February 1 for publication in the next issue of SciTech News.

Do you have a research project?

SciTech News is interested in publishing refereed research articles on library science topics. If you would like to submit such an article for consideration for publication in SciTech News, please contact the editors for details on formatting and creating an anonymized manuscript for referee review.
Warm greetings Sci-Tech members. This is my last column as Chair of the Sci-Tech Division. 2014 has really gone by fast. Sheila Rosenthal, our 2015 chair is already gearing up to take on the duties. Together with Beth Thomsett-Scott, our Conference 2015 Program Planner, they’re finalizing the SciTech program that will be offered in Boston, June 14-16, 2015.

As I reflect on the past year, I can say that we had a productive year. I had the amazing help and support from the Executive Board (Helen Josephine, Thea Allen, Anna Ren and Sheila Rosenthal), as well as the Advisory Board and many volunteers. Many committee chairs are continuing in their roles in 2015, but we have many vacancies as well. For the list of Officers and Committees as well as the open positions/vacancies, please see the web site, and volunteer for any of the committees you think you can make a contribution. http://scitech.sla.org/about-the-division/officers-and-committees/

Some 2014 accomplishments worth noting are:

- The addition of the SciTech Division Modern History, compiled by our able Public Relations Chair Bill Jacobs. If you have not read it yet, I highly encourage you to do so. It is posted on the division’s web site at http://scitech.sla.org/division-modern-history/. It is a nice complement to the Division Early History http://scitech.sla.org/about-the-division/division-early-history/.

- Another major accomplishment this year was making available electronically the past Science Technology News issues, an amazing task and great addition for future researching the history of our division. Roger Beckman, Jeremy Cusker and Christine Malinowski who were instrumental for the completion of this project received the well-deserved Impossible Award.

- Roger Beckman, our Archivist, created a beautiful photo slide show to mark the 90-year of the SciTech Division. We showed the slide show during the Reception and Awards Ceremony in Vancouver.

- The highly successful webinar offered by our Professional Development Committee chaired by Mary Frances Lembo “From Literature Searching to Literature Analysis: How to Create Insight with Search Results,” presented by Deborah Keller.

Our programs in Vancouver were very well received, which was reflected in the feedback we received from you. As we emphasized before, the feedback is important to us for the 2015 and 2016 conferences offered by the Sci-Tech Division. Linda Riewe, Ethan Masella and Anya Bartelmann were randomly selected among the people who filled out the survey and received a $20 Amazon gift card.

The program in Boston is shaping up nicely. Mary Frances Lembo and James Manasco revamped their traditional Science and Engineering 101 series (we recognized its 10th year offering in 2014) and in 2015 will start, what we anticipate to be a new tradition, with the series – Science and Technology 201. The topic selected for 2015, “What is e-Science?” was chosen based on the feedback we received. Other programs that SciTech will offer as lead division are:

- The Master Class: “Demystifying the information audit: from knowledge management (KM) to enterprise information management (EIM)”
- “Revolutionize Your Data – Tools for Visualization” as part of the traditional Computer Science Roundtable
- “Revolutionize Library Management:

SciTech News
Best Practices in Libraries” as a Tuesday Breakfast with a nine-speaker panel
- “Transforming International Science and Technology Librarianship”

In addition, SciTech will be the lead division for the traditional All Sciences Poster session. Last but not least, with the Engineering Division, SciTech members will be able to Tour the FM Global Facility in West Gloucester, RI. For details on these programs and all other 2015 Boston programs watch for future announcements.

As closing, I would like to express my huge gratitude to all those who have helped me this past year, and all of you for the trust you put in me. THANKS!!

Science-Technology Division New Members
Submitted by Anna Ren, Membership Committee Chair, Science-Technology Division

The Science-Technology Division welcomes its new members:

Bonneville Power Administration
Attn: Elizabeth Burke
Portland, OR
USA

Saroj Das
Gandhinagar, Gujarat
India

Lena Gomez
Washington, DC
USA

Muhammad Javed Iqbal
Islamabad
Pakistan

Aarti Jain
Delhi
India

Vishakha Jain
Delmi
India

Brynn Leise Mays
Lexington, KY
USA

Lev Rickards
McKinney, TX
USA

Elaine Sciolino
Malden on Hudson, NY
USA

Pinki Sharma
Rohtak, Haryana
India

Kathryn Varjabedian
Los Alamos, NM
USA

Kristen Wallerius
East Rutherford, NJ
USA
I was lucky to be awarded the Diane K. Foster international student travel award to travel from Wellington, New Zealand to Vancouver, Canada for the SLA conference. It was a pleasure to escape the Southern Hemisphere winter and enjoy the long summer evenings in June!! It was well worth the 14-hour flight!

Nine years ago when I was doing university studies in psychology and zoology, I did a year-long exchange to the University of Alberta in Canada. So it was wonderful to have the opportunity to visit Canada and feel 'upside down' again. I’d never noticed that the moon appears upside down too, but I discovered that little truth this time round!

But aside from getting to leave winter and travel to the summer sun, I really valued my time at the conference! Right from the first function, it was wonderful to chat with others who do what I do. It’s funny how we all work in our own little (or not so little libraries) in places dotted all over the world, but we can come together and share many of the same struggles and accomplishments.

Vancouver is breathtakingly beautiful and some of the sessions were held in rooms which offered a stunning view of the waterfront, Stanley Park and the Pacific mountains. I thought it was clever that the 'data visualisation' seminar was given in a room far away, but with the best view.

The theme of the conference, ‘Beyond Borders’, was poignant. It struck a chord with me when John Willbanks suggested that instead of thinking of borders as boundaries, we think of them as connections. For me, the best part of the conference was making connections with people like me from around the world. The week after the conference I went to Washington D.C. on holiday and contacted someone I’d met at SLA. She and a colleague showed me around the Congressional Research Service, which provided me with lots of ideas to use at my job at the Parliamentary Library of New Zealand.

I’ve pondered on many ideas since the conference. I particularly enjoyed Morag Hutcheson’s presentation ‘Bringing Parks to the People’. This was partly because I love Canada’s National Parks, but also because my organisation has many of the same challenges. We can’t just launch into social media either, but this presentation gave me the confidence to push boundaries (or is that connections?)

Huge thanks to the Sci-Tech Division and the Australia/New Zealand chapter for providing the means for me to have this experience. It was lovely to meet many of you in Vancouver and I hope we can meet again. If you get the chance to go to next year’s conference in Boston, I would recommend it!
Report on SLA Annual Conference 2014  
by Alesia Rudnitskaya (S. Kirk Cabeen Travel Stipend Award)

It was my great honour to be the recipient of the 2014 Sci-Tech Division’s S. Kirk Cabeen Travel Stipend Award and I’d like to take this opportunity to thank Dr. Philip Stahl, 2014 SPIE President, and SPIE Digital Library for their generosity in sponsoring this award. I was privileged to receive this financial support and tremendously grateful to both SPIE Digital Library and the SLA Sci-Tech division for making my first SLA conference happen. As I look back at this amazing experience, I realize that without this generous funding, I would not have been able to attend to learn, explore, connect and grow professionally.

What I learned

As a first-timer, I restlessly planned my schedule in order to make the most of the sessions and talks. Following the tip for the first time attendees on the SLA website, I selected at least two sessions for each slot. But most of the time, I struggled to be limited to two only, as I wanted to attend all of them. Nonetheless, I found it was worthwhile to stay focused on my professional field, while opt in for several sessions that were out of my area of expertise.

Working for CN as Digital Media Project Leader, I was particularly interested in topics dealing with technology, digital libraries and information architecture. I was hoping to learn more about digital asset management – the niche area that is becoming more and more prominent both in the corporate settings and in the academic world. Unfortunately, none of the talks were dedicated to this specific field, so I attended some sessions on SharePoint. Although, this platform is not suited for the organization and management of media files, it was very exciting to listen to some speakers who shared their experience in leveraging SharePoint for organizing textual information or cataloguing.

At the same time, shortly after the SLA conference, I was to start in my new position as Annual Giving Officer, Strategic Data, at McGill. So obviously, I tried to make most of the sessions covering data. One of the most impressive was the “Accidental Data Scientist: A new role for librarians & information professionals” presented by Any Affelt. I learned about this new emerging career for librarians, the skill set to work with big data (although I was supposed to have one already, since I got hired as a Strategic Data person), how to maximize the use of data, to communicate impact through data and predict future trends with data. I found all sessions on data visualization and infographics very informative. They offered practical advice on how to make data readable and understandable using freely available online tools or commercial applications. It was a great learning opportunity for me to understand the bigger picture in handling and making use of data, which definitely helped me significantly in transitioning from a digital media librarian into a data scientist.

I also enjoyed the uplifting talks about the evolving role of information professionals, various avenues that our profession can take us to and the importance of personal branding. Mary Ellen Bates was particularly inspiring as she spoke about different ways to market ourselves and to communicate the value we bring to an institution.

Networking

It needless to say that, apart from learning about trends and breakthroughs in your field, a conference provides great networking opportunities. The SLA 2014 was not an exception for me. I was able to reconnect with my former colleagues from the academic libraries and the corporate firm, and I had pleasure to meet many other fantastic librarians from all over the world. I must admit that it was not easy to find time to talk to people in between the sessions, because there was not enough time.
But the exhibition hall offered a great venue to chat not only with vendors, but also with many attendees, as everyone was relaxed and didn’t feel rushed to be on time for the next session. I was also lucky to room with another wonderful SLA attendee – a great way to meet new people and save money at the same time.

And of course, the best opportunity to network and make friends was networking and social events. The Karaoke Party, the Canadian reception and the IT Dance Party were a blast for all those who wanted to socialize and build connections in an unofficial setting. Lastly, the SciTech division reception was a great success. I had a privilege to be in the spotlight as the award recipient and most delighted to finally meet in-person the amazing members of my division who I knew through email.

Looking back at this memorable experience, I realize how important it is to invest into my career by attending professional conferences. Spreading knowledge, sharing ideas, boosting your confidence, getting invigorated, building your network and having a great time - this all happens at SLA.
In September 2013 I took on the role of Librarian at the Department of Engineering, University of Cambridge. Having never worked with this subject before, I immediately set out to find out which professional groups support this area. SLA has a whole Division dedicated to Engineering so it seemed like an obvious one to join and when a funding opportunity arose to help an international librarian attend the SLA Annual Conference in Vancouver I had to apply!

My main goal in attending the annual conference was to gain a stronger understanding of the information needs of Engineers and how they are addressed in other institutions. I attended a wide range of networking and programme events to help me achieve this goal.

What was different about SLA?

The people

There was a great mix of information professionals from a wide variety of workplaces, bringing different angles on issues that affect us all.

The programme

Carefully planned by divisions, sections and caucuses, the sessions featured librarians and vendors presenting side-by-side. This is very unusual in my experience – conferences I usually attend focus far more on papers submitted by attendees and all from the librarian’s perspective, with just a few keynotes to set the context and contrasting views. I really liked SLA’s approach because it meant that we got sometimes opposing views but always differing perspectives. The one thing I would change is that the papers that had been submitted were listed quite anonymously as ‘Contributed Paper Sessions’ with no theme attached. This meant that when I was looking at a jam-packed schedule full of equally relevant topics I was less likely to click through to see what was included in these sessions.

The networking

The emphasis was just as much (perhaps more?) on opportunities for networking as on conference programming. On the first day alone I attended the Sci-Tech Division’s newcomers’ lunch, the Fellows and First-Timers Meet and went for dinner with members of the Engineering Division. This continued throughout the conference with sponsored lunches and evening receptions. Unfortunately the timezone issue meant that I was fading by 8pm when the real partying began each evening (I know, I know, but it was 4am to me...)

Some Programme Highlights

General Opening Session

The conference opened with awards to inspirational individuals from a variety of sectors and at all stages of their careers. I know others really enjoyed the keynote speech by John Wilbanks, but I’m afraid I spent the whole talk wondering when he was going to mention the ‘minor’ inconvenience of the ethical considerations involved with sharing of data, especially when it comes to genomics.

Science and Engineering 101

Being new to Engineering Librarianship, this session was incredibly useful! Reading the conference programme I was a little anxious in case it would be too full of ‘in’ jokes from the past ten years, but I need not have worried. Coming to this session felt a bit like
joining a club within SLA - the insider jokes were there, but Mary Frances and James explained them all while sharing their knowledge of which resources are most useful for various research topics within Science and Engineering.

**Engaging users with technology**

This session was organised jointly by the Engineering Division and User Experience Caucus and is a great example of the careful thought that went into the conference programming.

First up was Heather O’Brien, speaking about her academic research in the area of user engagement. She described the cycle of engagement, from the ‘hook’ or point of engagement, through sustained engagement while the activity is taking place to disengagement and the importance of making sure our users ‘disengage’ on a positive note. Heather’s research looked at which news stories individuals chose to read and why, which photos stood out to participants in a photo diary study, and which types of material individuals found most engaging.

She found that user engagement is affected by context (natural environment vs lab, novelty important for news but less so in other information formats), complexity and content (for many this is more engaging than the format in which material is presented).

Donna Wrublewski then talked about gamification as a method of engagement at the Marston Science Library, University of Florida. She described a number of the games developed as part of the GAP (Gaming Against Plagiarism) project [http://digitalworlds.ufl.edu/projects/gap/](http://digitalworlds.ufl.edu/projects/gap/). The next stage for them is to look at making these games customizable for use by other institutions.

Lastly, Damara Jacobs-Morris introduced the Voices of the Canoe website [http://moa.ubc.ca/voicesofthecanoe/](http://moa.ubc.ca/voicesofthecanoe/). Damara is a member of the Squamish community in Vancouver and worked with the Museum of Anthropology to support teaching and learning about history in a new way by including the perspectives of indigenous people. This project is about to enter a phase of usability testing and evaluation.

**Other sessions**

I’m coming to my word limit so just a quick mention of other sessions I enjoyed:

- Mid-year Leadership Tune-up: open to all, this gave an insight into the workings of SLA Divisions and Chapters;
- Electronic Lab Notebooks: a topic I knew nothing about, I found this session extremely useful and am writing it up separately for the Engineering Division;
- ABCD Round Robin: a meeting to start off a new section of the Engineering Division for Architecture, Building Engineering, Construction and Design;
- When Powerhouses Merge: Librarians’ and Vendors’ Perspectives – looking specifically at Elsevier’s acquisitions of Knovel and Mendeley.

**Some final thoughts**

I am very grateful for the opportunity to attend SLA Annual Conference. I would like to thank the Science-Technology and Engineering Divisions for awarding me the 2014 Bonnie Hilditch International Librarian Award and to thank Jo Alcock (Birmingham City University) and Clare Aitken (Schlumberger) for supporting my application. I came away from Vancouver with a clearer understanding of issues in science and engineering librarianship and made lots of new contacts in my field. I’m looking forward to getting more involved in SLA and finding my way to future conferences!
Call for Nominations and Applications

2015 Science-Technology and Engineering Divisions Bonnie Hilditch International Librarian Award

The Bonnie Hilditch International Librarian Award, sponsored by the Science-Technology and Engineering Divisions, is presented to a librarian outside of the United States and Canada. The purpose of the award is to provide an opportunity for a librarian outside of the United States and Canada to attend the annual Special Libraries Association (SLA) conference. The award will cover conference registration, lodging and airfare, up to and not exceeding US $3,000. The SLA annual conference will be held in Boston, Massachusetts, USA, June 14-16, 2015.

The Awards Committee reserves the right to withhold the award if a sufficient number of appropriate candidates are not nominated.

QUALIFICATIONS:
• Be a current member of SLA, preference given to members of the SLA Science-Technology and/or Engineering Division.
• Candidate should reside and work outside of the United States and Canada and be working currently in a library, information center, library school or other information capacity, preferably either in the science and technology and/or engineering area.
• Submission should be in English.

NOMINATIONS:
• Self-nominations are encouraged. Send an online statement including information on the candidate’s professional career, professional activities or offices held, special projects or services, publications, and any other related functions that qualify the person for the award.
• Documentation must include a current curriculum vita OR resume for the candidate, significant publications, supporting letters, etc.
• Please inform the committee if you are currently applying for other SLA awards.

DEADLINE FOR NOMINATIONS: December 31, 2014. Nominations and all accompanying materials should be sent to Janet Hughes, Chair of the Sci-Tech Division Awards Committee, at the following email address: jah19@psu.edu.

APPLICATION PROCEDURES for the SCIENCE-TECHNOLOGY and ENGINEERING DIVISIONS BONNIE HILDITCH INTERNATIONAL LIBRARIAN AWARD
1. The winner will be responsible for making all necessary travel arrangements (passports, visas, etc.) for a visit to the USA as well as for conference attendance.
2. Include a current resume and relevant materials as outlined in the criteria for the award.

POST AWARD REQUIREMENTS:
1. Recipient will write a brief article (approximately 1,000 words) on the conference experience for the November 2015 SciTech News.
2. Recipient will be asked to serve on the Science-Technology and Engineering Division Awards Committee the following year in order to provide for the continuity and enthusiasm of this award.

NOTIFICATION:
1. Applicants will receive notification of award status by mid-February 2015. The award check will be sent to the recipient as soon as the receipts are received by the Awards Chairperson.
2. The recipient's names will be posted to the Science-Technology and Engineering Division’s Web sites.
3. The announcement and introduction of the recipient will take place at both the Science-Technology Division’s Awards Ceremony and the Engineering Division’s Annual Business Meeting/breakfast.

E-mail nominations and materials preferred. If necessary, send nominations and materials to:

Janet Hughes
408 Paterno Library
The Pennsylvania State University
University Park, PA 16802-1811
Greetings to all Chemistry Division (DCHE) Members! I would like to extend a thank you to all who helped and supported my efforts as Chair this year. It was a fun year and I learned a great deal about SLA and planning a major part of the conference. I certainly hope that everyone enjoyed the presentations in Vancouver and gained some knowledge and acquired many new friends.

I am looking forward to Boston and the great program Ye Li, Chair, Elect and Amanda Schoen, Co-planner have developed for us. The joint program with the Chemical Information Division (CINF) of the American Chemical Society (ACS) on laboratory safety is very pertinent and important. Coming from an industrial background I often wonder how academia, with much more limited resources than corporate R&D labs, can provide all the needed safety training to an ever revolving cohort of students. I am sure the program at Boston will help all chemistry librarians increase their contribution to the safety program at their institution. Again, like the electronic laboratory notebook program at Vancouver, it will provide an opportunity for chemistry librarians in industry and academia to share and learn from each other.

I believe the blend of industrial and academic librarians is one of the strengths of DCHE and I would like to encourage all members to publicize this benefit and promote it. The courses that DCHE will be offering in Boston illustrate this synergy as both academic and industrial librarians have taught the courses in recent years and shared the knowledge they have acquired. The courses provide a unique opportunity to help train new members along with offering support for those just combining a chemistry background with librarianship.

Speaking of members, I want to ask everyone to promote DCHE. SLA is losing members as is our division. Certainly, the closing of many industrial libraries had reduced the employment opportunities for chemistry librarians but the growth in membership from the academic segment has added to our ranks. Please take the opportunity when you hear of a new librarian who has responsibility for chemistry information resources, to introduce yourself and offer support, and sing the praises of the chemistry division. There is nothing like a personal touch to call attention to the benefits of membership.

Our mentoring program for new members under Denise Callahan’s guidance had done a great job. I wonder what else we can do to entice new members and convince librarians to join DCHE as a secondary division, if it does not happen to be their primary — no extra cost — division. Perhaps there is more that we can do to assist untenured chemistry librarians get the quality journal articles published that are often necessary for tenure. Please think about how to attract new members and keep DCHE vibrant and exciting!
**Membership Updates**

*by Dawn French, DCHE Membership Chair 2015*

Efforts are getting underway to assess the membership of DCHE. In upcoming months, a membership survey will be put together. Encourage your colleagues to join the Division and have access to these great resources for connecting with others when in need of information resources or networking.

1. Division website: [http://chemistry.sla.org/](http://chemistry.sla.org/)
2. Division listserv: [http://chemistry.sla.org/listserv/](http://chemistry.sla.org/listserv/)
3. CHMINF-L listserv: hosted by Indiana University contains a wide range of chemistry professionals beyond librarians and information professionals.
4. MRM listserv: [http://chemistry.sla.org/mrm/#list](http://chemistry.sla.org/mrm/#list) – great for more in depth information regarding material science.
5. Mentoring opportunities: Want a mentor or to be a mentor to a Division member? Contact Denise Callihan ([callihan@ppg.com](mailto:callihan@ppg.com)), Chair of the Mentoring Committee.

**DCHE Welcomes New Members**

(Joining dates between August - October 2014)

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susan Ruoff</td>
<td>Lansdale, PA</td>
</tr>
<tr>
<td>Kris Roth</td>
<td>Washington, DC</td>
</tr>
<tr>
<td>Fiona Patrick</td>
<td>Horseheads, NY</td>
</tr>
<tr>
<td>Daisy Nip</td>
<td>Rosemead, CA</td>
</tr>
</tbody>
</table>

**Materials Research & Manufacturing Section New Members**

Submitted by Bette Finn, Materials Research & Manufacturing Section

The Materials Research & Manufacturing Section of the Chemistry Division Welcomes Its New Member:

Fiona Patrick
Operations Leader
Corning Incorporated
Knowledge Management/Information Protection
1073 Sing Sing Road, L8
Horseheads, NY 14845
The SLA Division of Chemistry (DCHE) is excited to announce that our program proposals for SLA 2015 have been accepted by the conference advisory council. The highlight of DCHE programs this year is the one-day bi-society symposium on June 15 themed on chemical safety information, co-sponsored by the Chemical Information Division (CINF) of the American Chemical Society (ACS). Since a few life-threatening lab incidents reported in the last few years, laboratory safety has become a crucial component of strategic considerations of most academic, industrial and governmental research institutions. This one-day bi-society symposium will feature speakers and panelists including safety information vendors, educators, librarians, safety officers, as well as researchers and developers of point-of-need information systems. Join us to learn a variety of resources and strategies to take actions on the lab safety front as information professionals and make your organization a safer place for laboratory learning and research. The symposium will also provide a unique opportunity for members of SLA-DCHE and ACS-CINF to mingle and discuss topics on services and researches around chemical information in general.

In addition to the safety information symposium, a crescendo session titled “The Next Great Invention: How to Help Your Organization Make It A Reality” will offer both basics and advanced search and manage strategies as well as the latest updates on patents for information professionals at all levels. During our DCHE Business meeting session, besides learning more about our division daily work and accomplishments, we will celebrate our Sparks Award winner and hear updates from major vendors of chemical information.

You can share your accomplishments and research in the All Science Poster session co-sponsored by DCHE. We will also enjoy more networking and fun time together at our Newcomer’s Hosted / Member’s No-host Dinner. Our program will complete with a Master Class on the Science of 3D Printing co-sponsored by DCHE, Engineering Division, Food, Agriculture & Nutrition Division, Pharmaceutical & Health Technology Division, Science Technology Division, and Biomedical & Life Sciences Division. We will explore the groundbreaking development and applications of 3D printing together and the role of libraries and information professionals in providing this promising service.

With professional development, we will offer two days of DCHE courses just before the start of the conference. The Chemistry for the Non-Chemist Librarian course will be hosted at on MIT’s campus all day on Friday, June 12. Many thanks to Erja Kajosalo of MIT Libraries for hosting the class. On Saturday, June 13, we will have two offerings at the conference location: the fundamental course Chemical Information Sources, and the advanced course Extreme Structure Searching: Organics, Organometallics, Polymers, and Markush. Plan to learn new skills or update your skill set by attending one or more courses!

Please find more about our programs on the DCHE website at http://chemistry.sla.org.

The DCHE program planners and board members are working hard together to bring this exciting program to you at Boston. We look forward to making this conference a fun and productive experience for you.
In my final column as chair of the Engineering Division I would like to reflect on achievements of the year and look forward to future developments.

During 2014 the Engineering Division and our two sections, Aerospace and Architecture, Building Engineering, Construction and Design, sponsored seven sessions and co-sponsored an additional three. The Division presented awards for continuing education (Patricia Aspinwall), student travel (Jack Dale), conference travel stipend (Dr. Susmita Charkraborty), and international travel (Niamh Tumelty). We also honored two members for achievements: Kathryn Breininger (Aerospace Section George Mandel Memorial Award) and Penny Sympson (SLA Engineering Librarian of the Year Award). Please see the September issue of Sci-Tech News for conference session reports and more details about the award winners. Slides and other presentation materials when available can be found on the Online Planner under the individual session.

This year also marked the development of our first strategic plan for the Division. The strategic plan was developed through member surveys, approved by the Engineering Division Board, and presented at the annual meeting in Vancouver. Now that the strategic plan is in place the next step is to develop an action plan. I formed an Action Planning Committee co-chaired by Danielle Harrison and Maureen Kimball to guide the board. We welcome input from the Division members on developing action items.

Planning for 2015 annual conference is well under way under the leadership of Chair-Elect Sara Davis and Program Planner Penny Sympson. We will be offering traditional programs (“Engineering Division No-Host Dinner,” “Engineering Division Business Meeting and Luncheon” and “Standards Development and Update.” The Aerospace Section will host “NASA Spinoffs: To Space and Back.” The new Architecture, Building Engineering, Construction and Design Section will host “Hot Topics in Architecture & Building Design.” Additional programs include “How-to select the best databases for your community: proven methods for comparison,” “Nanotechnology: What's the Big Deal?” and a FM Global Facility Tour. Please look for information on these exciting programs next year.

The Engineering Division is honored to be served by capable volunteers. I would like to congratulate the newly elected officers for the Division:

- Giovanna Badia, Chair-Elect (2015), Chair (2016), Past Chair (2017).

The Vancouver Conference served as the successful launch of the new Architecture, Building Engineering, Construction and Design (ABCD) Section. The section provides a forum for members to exchange knowledge about information resources, trends, and best practices. Meetings and programs focus on issues related to this industry and allow information professionals to better serve their organizations and clientele. This new section continues the interests of the former Architecture, Building Engineering, Construction and Design Caucus which was created in 2006.
Giovanna is a Liaison Librarian at McGill University’s Schulich Library of Science and Engineering for the departments of Bioengineering, Chemical Engineering, Mining & Materials Engineering, and Earth & Planetary Sciences. Her responsibilities include answering reference questions, providing instructional services, and collection development. She currently serves as Secretary of the SLA Engineering Division.

- **Christina Byrne, Secretary (2015-2016).** Christina is the Assistant Head, Engineering Library at the University of Washington in Seattle. She manages the UW Engineering Library’s circulation, collection maintenance and technical services operations, and coordinates the building’s maintenance activities and facilities projects. She is the liaison to the Bioengineering department. She is also responsible for collection development in general engineering and standards, as well as collections and services related to patents and trademarks. In addition to the Engineering Division, she is a member of the Science-Technology and Academic Divisions, as well as the Baseball Caucus. As a member of the Pacific Northwest Chapter, Christina has held leadership positions as Secretary (1997-98), President-elect (2002-03), President (2003-04), Past-President (2004-05), and Director (2007-12). She has served on the Chapter’s Elections Committee, and she worked on the Local Arrangements Organization/Planning Committee for the 2008 Annual Conference in Seattle as Hospitality Booth Co-Coordinator.

For 2015, the Division will be in capable hands with incoming chair Sara Davis. I would like to recognize the members who have stepped up to chair committees and programs. Niamh Tumelty will serve as 2016 Program Planner and work with Chair-Elect Giovanna Badia in planning the 2016 annual conference in Philadelphia. Vanessa Eyer is the new Archivist. Ashley Faith is the chair of the Mentoring Committee. Jeremy Cusker will take over the Standards Committee. Marge Rhodes serves as List Administrator. These new chairs will join continuing chairs on the Engineering Division Board. I also would like to recognize and provide special thanks to members who have completed their appointments during 2014: Patricia Aspinwall (Fundraising Chair), Amber Collins (List Administrator), Susan Morley (Standards Chair), Bonnie Osif (Archivist and Mentoring Chair), Mary Strife (Aerospace Section Past Chair), Beth Thomsett-Scott (2014 Program Planner), and Karen Vagts (Strategic Planning Chair).

In 2015 I will continue as chair of the Nominating Committee. In this capacity I will be contacting you to seek nominations for open Engineering Division Board positions including chair-elect. The successful candidate will lead the Division in planning the 2017 annual conference. I encourage you to consider service to the Division by running for a Board position or volunteering to serve on one of our committees.
As the winner of the IEEE Continuing Education Award at the 2014 SLA Conference in Vancouver, I had the fantastic opportunity to attend the “Presenting Information in Visual Formats: Tools for Adding Insights and Value to Your Deliverables” course presented by Marcy Phelps.

This course implored that we must move beyond just being information professionals and become information analyzers. In addition to providing information, an information analyzer needs to synthesize this information into a visual presentable format to assist in telling of the story.

Ms. Phelps communicated during the course the different methods that data can be shown visually. These methods included charts, maps, and diagrams. She taught which visual methods are the best way to show which type of data and through her informal hands-on approach we were able to try the various methods and discuss the pros and cons of each.

Many of us have probably used visual tools at some point in our career, but Ms. Phelps gave us tips to improve our visuals so they are fantastic in the eye of our clients. The key points were to remember what information we are trying to present, use only the data that is needed, and in the end to keep it simple.

By the end of the course, the group was excited that we walked away with new hands-on knowledge that any of us could apply in our jobs. I took this opportunity to use this knowledge a few weeks later when I had to present some data to my supervisor to help him make key decision. I made a visual chart showing the current records management structure for the department and how it was not practical as our specific project was growing. Through 2 other visual charts, I was able to provide him information on choosing which method was the best for the project.

Thank you again to IEEE for sponsoring the Continuing Education Award. It was a great opportunity for me to expand my knowledge.
$1000 IEEE Continuing Education Stipend – Call for Applications

Stipend to attend the SLA Annual Meeting in Boston, MA, June 14-16, 2015

IEEE (Institute of Electrical and Electronics Engineers) is sponsoring for SLA Engineering Division members a travel stipend up to $1000 toward payment of expenses incurred while attending any Continuing Education course offered at the annual SLA conference in Boston, June 14-16, 2015.

The IEEE Stipend will be given to the qualified member who submits an essay up to of three double-spaced typed pages judged to be the best paper that addresses “how the member will benefit professionally from a continuing education course.” Please email Stephanie Sheldon (stephanie.sheldon@lmco.com) for a list of Continuing Education courses offered during the SLA 2015 conference.

Qualifications for Entering Award Competition:
• Be a member of the SLA Engineering Division in good standing at the time of applying for the award.

Special Instructions:
Include your full name (without any additional personal information) at the top of each essay page. Double space your submission.

Deadline for Submission: March 01, 2015.

The winner must be present to accept the award at the annual Engineering Division Business Meeting during the SLA 2015 conference.

The award winner will also receive a complimentary ticket to attend the Engineering Division’s Luncheon at the annual conference.

Post-award requirements:
The winner will also be required to submit an article to the Engineering Division newsletter (SciTech News) within twelve months of completion on how the course helped them professionally.

Submit Entries for the award to:
Stephanie Sheldon
E-mail: stephanie.sheldon@lmco.com
or to:
Stephanie Sheldon, SLA-ENG Awards Committee
Lockheed Martin Aeronautics Company
Company Research Library, MZ 0124
1011 Lockheed Way
Palmdale, CA 93599
Ph: (661) 572-7648


Published by Jefferson Digital Commons, 2014
$1500 Engineering Librarian of the Year Award – Call for Applications

The Engineering Librarian of the Year, sponsored by IHS, highlights the accomplishments and contributions of SLA Engineering Division members to the engineering librarian profession. The winner must be present to accept the $1500 award at the annual Engineering Division Business Meeting held during the annual SLA conference in Boston, MA, June 14-16, 2015.

Prospective candidates are encouraged to nominate themselves, or they may be nominated by a colleague or associate.

Criteria for entry are:
1. Be a member of the SLA Engineering Division in good standing at the time of applying for the award.
2. Distinguished achievement(s) in the engineering library profession, through an exceptional contribution on the job, within the SLA Engineering Division, or within the industry at large. Accomplishment(s) should have taken place within the calendar year immediately preceding nomination/application. However, in selected cases, based solely on the Awards Committee’s judgment, recognition may be given for ongoing, long-term contribution(s).

In addition to the $1500 award, the recipient of the award will receive a complimentary ticket to attend the Engineering Division’s Luncheon at the annual conference.

Deadline for Submission: March 01, 2015.

Instructions for submissions:
Submit the nomination/application by March 01, 2015. Provide full name, job title, address, telephone numbers, e-mail address, and a maximum one-page statement of the nominee’s qualifications to:
James Blank
blank_james_r@cat.com
Phone: 309-578-6980
$1200 SPIE Digital Library Student Travel Stipend – Call for Applications

Stipend to attend the SLA Annual Meeting in Boston, MA, June 14-16, 2015

SPIE Digital Library is sponsoring for library school students the award of a $1200 travel stipend toward payment of expenses incurred while attending the annual Special Libraries Association conference in Boston, MA, June 14-16, 2015. SPIE Digital Library is the world’s largest collection of optics and photonics applied research.

The SPIE Digital Library Student Travel Stipend Award will be given to the qualified student who submits an essay up to three double-spaced typed pages that is judged to be the best essay submitted describing the following scenario:

What is the value proposition of the special library? Please list key benefits special libraries provide to the parent organization and, compared to alternatives, identify the special library’s primary differentiators.

Qualifications for Entering Award Competition
The essay winner must be a student member of the SLA Engineering Division at the time of acceptance of the award.

Special Instructions
1. Provide your full name, address, telephone number, email address, and a statement on one page of your qualifications, as given above, for entering the award competition. Include the name of your library school.
2. Include your full name (without any additional personal information) at the top of each essay page. Double space your submission.

In addition to the travel stipend, the award recipient receives a one-year student membership to the SLA Engineering Division, and a complimentary ticket to attend the SLA Engineering Division Luncheon at the annual conference.

Deadline for Submission: March 01, 2015

Submit entries for the award to:
Taya Cagle
SLA Engineering Awards Committee
Taya.Cagle@boeing.com
(425) 518-3048

Published by Jefferson Digital Commons, 2014
The following section consists of book reviews selected from *Reference and Research Book News*, reprinted with the permission of Book News Inc. This review journal is published six times a year, each issue reviewing thousands of new titles in all disciplines. For a sample issue and subscription information, contact Book News Inc at booknews@booknews.com or (503)281-9230.

**GEOGRAPHY**

G70 9781466570375

Morton J. Canty
CRC Press, ©2014 527 p. $139.95

Canty presents a graduate-level textbook on analyzing images from remote sensing that emphasizes the mathematics, algorithms, and computers. It does not have the broad scope of many such textbooks, he says, but it covers in detail the aspects it addresses. It focuses on pixel-oriented analysis of visual/infrared Earth observation satellite imagery. The topics are images, arrays, and matrices; image statistics; transformations; filters, kernels, and fields; image enhancement and correction; supervised classification; unsupervised classification; and change direction. The third edition uses the Python programming language to illustrate the many image processing algorithms that earlier editions introduced.

**ENVIRONMENTAL SCIENCE, ECOLOGY**

GE145 9781118634530

*Statistical Applications for Environmental Analysis and Risk Assessment*
Joseph Ofungwu (Statistics in Practice)
Wiley, ©2014 624 p. $125.00

For fellow environmental scientists and students in the field, Ofungwu introduces fundamental statistical concepts and their applications in an unambiguous language without assuming prior knowledge of statistics; draws attention to the important but often overlooked role of statistics in environmental contaminant sampling and exposure risk assessment; and provides packaged software scripts and macros using freely available software to get aspiring as well as practicing environmental professionals off to a running start. One reason environmental scientists have not used much statistics in the past was the formidable cost of high quality statistics software, he says, but the advent of R has changed all that.

GF125 9781466564497

*Global Urban Monitoring and Assessment Through Earth Observation*
Edited by Qihao Weng (Taylor & Francis Series in Remote Sensing Applications; Volume 10)
CRC Press, ©2014 394 p. $139.95

This volume contains 18 chapters on global urban monitoring, assessment, modeling, and prediction through Earth observation and related technologies. Geoinformatics, remote sensing, and other researchers from Europe, North America, and Asia examine the needs and requirements of global urban observation and assessment, with discussion of the Group on Earth Observations’ Global Urban Observation and Information Task, its urban supersites initiative, a framework to exploit observation-derived information in urban studies, and satellite sensors for urban mapping, assessment, and monitoring. Then, they outline international efforts at mapping global urban footprint using SAR (synthetic aperture radar) data, satellite-observed lighting, satellite images and existing GIS (geographic information systems) data, and fine-scale remotely sensed data; urban observation, monitoring, forecasting, and assessment initiatives using multitemporal data, fine-scale built-up area mapping, and other methods, as well as investigations of thermal behavior and the climatological and geographical impacts of the global flu pandemic of 2009; and innovative concepts and techniques in urban remote sensing and sustainable urban development, such as object-based image analysis, detecting informal settlements, automated techniques for change detection, and the fusion of SAR and optical data for urban land cover mapping and change detection.

**ECONOMICS**

HA33 9780838912270

*The Reference Guide to Data Sources*
Julia Bauder
ala editions, ©2014 172 p. $60.00 (pa)
Reference questions seeking the raw data that lies behind statistics is a service that has been mostly handled by academic research libraries. Yet with the growth of the Internet and the rise of relatively easy to use statistical software packages, these queries have increased at public and even high school libraries. Many of these same libraries, however, do not purchase access to subscription databases. Thus this book provides the service of directing reference librarians at these institutions to freely available online sources of micro- and aggregate data, data from surveys, censuses and administrative records, and cross-sectional, longitudinal and time-series data. The types of data that might be sought are broken in 24 categories, such as crime, earth sciences, economics, or health care. Each chapter provides some sources specific to the US, some international sources, and some minor sources of specialized data. Although Appendix A notes that there is currently no specification for citing data sets in the latest editions of the Chicago, APA or MLS style manuals, it recommends the International Association for Social Science Information Services and Technology’s Quick Guide to Data Citation, and provides a brief example. The second appendix provides guidance in using the open-source Survey Documentation and Analysis (SDA) software.

Scott Derks
Grey House Pub., Inc., ©2014 738 p. $155.00
The 100 plus tables in this reference list national average wages, investment yields, prices of staple foods per pound, and prices advertised for clothing, appliances, business equipment, education, entertainment, furniture, household products, cars, sporting goods, toiletries, medical products, toys, and travel. The first chapter covers 1860 to 1899 and the remaining chapters cover five year periods. Black and white advertisements from the different eras reflect lifestyle changes. The fifth edition updates conversion charts and adds a chapter on 2010-2014.

Discontinuous Innovation: Learning to Manage the Unexpected
Peter Augsdörfer, John Bessant, Kathrin Möslein, Bettina von Stamm, and Frank Piller (Series on Technology Management; Volume 22)
Imperial College Press, ©2013 446 p. $75.00
Based on a research project called the Innovation Lab, which focuses on the challenge of discontinuity in innovation in companies in 15 European countries and Australia, this volume describes information and cases of different aspects of discontinuous innovation. The authors view the innovation process as involving searching for triggers, selecting from those ideas, and implementing them, which is influenced by the overarching presence of a clear innovation strategy, the enabling conditions of an organization designed to support the innovation activities of individuals, and the development of pro-active linkages with partners, as well as considering how the organization reflects on how it organizes and manages the innovation activity and whether it is capable of adapting and changing core operating mechanisms to keep up with a shifting environment. They present the approach of the project and literature in the field, and focus on the stages of the process of innovation, including the role of ambidexterity, exploratory innovation, users, selection strategies, innovation buy-in, strategic flexibility, and business design in high-tech firms, small and medium-sized enterprises, large organizations, BMW, the Danish Ministry of Taxation, Schneider Electric, Coloplast, Philips, UnternehmerTUM, Ethicon, Munich Airport’s InfoGate service, and other companies. Distributed by World Scientific.

Mathematics for Physical Science and Engineering: Symbolic Computing Applications in Maple and Mathematica
Frank E. Harris
Academic Press, ©2014 768 p. $125.00
Differing from other texts, this book ties the mathematical topics under consideration to symbolic computation, which, the author asserts, can enhance understanding, help with visualization of results, and out-do purely numerical approaches when applied to real-world problems. For upper level undergraduates in physics and engineering, and for graduate students and professionals seeking reinforced knowledge of symbolic computing.

Computational Thinking for the Modern Problem Solver
David D. Riley and Kenny A. Hunt (Chapman & Hall/CRC Textbooks in Computing)
CRC Press, ©2014 389 p. $79.95
Riley and Hunt introduce computer science as an independent body of thought that is an essential part of what it means to be educated today. Thinking algorithmically is uniquely important just as is scientific investigation, artistic creativity, or proof theory in mathematics, they say, yet computational thinking is a distinct form of thought, separate from other academic disciplines. Their topics include how real-world information becomes computable data, modeling solutions, data organization, and limits of computation. A course using this book would be expected to include some instruction in computer programming, but they leave the choice of programming language and the depth of coverage to the discretion of the instructor and to other textbooks.

QA183 9781479930357
Symbolic and Numeric Algorithms for Scientific Computing (SYNASC); proceedings
This proceedings volume contains 66 papers selected from those presented at a September 2013 symposium. Papers are grouped in sections on symbolic computation, numerical computing, logic and programming, artificial intelligence, distributed computing, advances in the theory of computing, management of resources and services in cloud and sky computing, HPC for scientific problems, agents for complex systems, and natural computing. Some subjects explored include secure cloud applications, minability through compression, timed mobility in distributed systems, securing communication in peer-to-peer messaging middleware, and exact polynomial algorithms for a given job sequence. Also covered are non-interleaving operational semantics for geographically replicated databases, and computing origami universal molecules with cyclic tournament forests. The book is illustrated with small format b&w photos and images.

QA269 9781138024731
Reflexion and Control: Mathematical Models
Dmitry A. Novikov and Alexander G. Chkhartishvili (Communications in Cybernetics, Systems Science and Engineering; Volume 5) CRC Press, ©2014 284 p. $89.95
In surveying modern approaches to the mathematical modeling of reflexion in control, Novikov and Chkhartishvili include an important class of game-theory models--reflexive games--that describes the interaction of subjects making decisions based on a hierarchy of beliefs about essential parameters, beliefs about beliefs, and so on. They cover reflexion in decision making, informational reflexion and control, strategic reflexion and control, and applied models of informational and reflexive control.

QA276 9781118407417
Making Sense of Data I: A Practical Guide to Exploratory Data Analysis and Data Mining, 2nd Edition
Glenn J. Myatt and Wayne P. Johnson Wiley, ©2014 235 p. $74.95 (pa)
This guide details basic data analysis approaches to make better business decisions. It outlines a step-by-step process describing how to prepare data prior to analysis; generate summaries; identify non-trivial facts, patterns, and relationships; and create models from the data to better understand it and make predictions. It addresses understanding the problem that needs solving, what data will be used and how, who will use the information generated and how it will be delivered to them, and the specific and measurable success criteria against which the project will be evaluated. It also covers data table elements, visualizing and describing relationships between variables, extracting interesting rules, and identifying and making statements about groups of observations. This edition has updated exercises for manual and computer-aided implementation with worked examples; new appendices with coverage of Traceis software, including tutorials using data from various disciplines; new coverage of multiple linear regression and logistic regression; and additional real-world examples of data preparation.

QA280 9781611973334
Nonlinear Time Scale Systems in Standard and Nonstandard Forms: Analysis and Control
Anshu Narang-Siddarth and John Valasek (Advances in Design and Control)
SIAM, ©2014 219 p. $94.00
Narang-Siddarth and Valasek describe control design techniques that extend singular perturbation theory to a larger class of systems than previously, specifically systems in which different processes run at different time scales. Their goal is to show that some classes on non-minimum phase control problems can be actively controlled in real-time through the use of singular perturbation methods. They cover analyzing time scale
systems, two-stage design, sequential design, sequential design for multiple time scale systems, some applications to the control of non-minimum phase systems, and simultaneously tracking slow and fast trajectories.

**QA297  9780124202283**  
*An Introduction to MATLAB Programming and Numerical Methods for Engineers*  
Timmy Siauw and Alexander M. Bayen  
Academic Press, ©2015  317 p.  $79.95 (pa)  
This book is intended to teach engineers and scientists with no programming experience how to write computational problem solving programs using common engineering formulas and mathematical tools. Using the MATLAB environment, specifically designed and used for mathematical computations, the authors instruct readers in the basic concepts of programming, and detail how to use those concepts to construct complex mathematical equations and functions. Although no programming experience is necessary, the authors assume that the reader has knowledge of high school level algebra and trigonometry as well as introductory college level calculus. Each chapter includes examples and activities for the reader to try out using the MATLAB environment to solve common mathematical equations.

**QA323  9781611973358**  
*Practical Augmented Lagrangian Methods for Constrained Optimization*  
E. G. Birgin and J. M. Martínez (Fundamentals of Algorithms; 10)  
SIAM, ©2014  220 p.  $65.00 (pa)  
Brazilian mathematicians explain the augmented Lagrangian method for solving constrained optimization problems for engineers, chemists, physicists, economists, and others who use constrained optimization for solving real-life problems. They assume readers are familiar with elementary calculus in Rn with the basic topological properties concerning convergence of sequences and compact sets, but no further mathematical background. After the statement and interpretation of all the relevant theory, they introduce a specific constrained optimization package of augmented Lagrangian type called Algencan.

**QA325  9781118709252**  
*Repeated Measurements and Cross-Over Designs*  
Damaraju Raghavarao and Lakshmi Padgett  
Wiley, ©2014  255 p.  $125.00  
Raghavarao and Padgett describe experimental designs that can be used in a number of disciplines, including agriculture, drugs, and manufacturing. Unlike some researchers they distinguish between repeated measurement designs and cross-over designs, using the former term for experiments in which the units being studied do not receive different treatments during the experiment, and using the latter for experiments in which they do. The topics include one-sample repeated measurement design, growth curve models, cross-over designs with and without residual effects, two-period cross-over designs with residual effects, and some constructions of cross-over designs.

**QA378  9781482206425**  
*Modeling and Inverse problems in the Presence of Uncertainty*  
H.T. Banks, Shuhua Hu, and W. Clayton Thompson (Monographs and Research Notes in Mathematics)  
CRC Press, ©2014  391 p.  $89.95  
Banks, Hu, and Thompson share the results of their research since the beginning of the 21st century on certain aspects of uncertainty propagation. They write for investigators in applied mathematics interested in deterministic and/or stochastic models and their interactions as well as for scientists in biology, medicine, engineering, and physics interested in basic modeling and inverse problems, uncertainty in modeling, propagation of uncertainty, and statistical modeling. Among the topics are mathematical and statistical aspects of inverse problems, estimating probability measures using aggregate population data, and a stochastic system and its corresponding deterministic system.

**QA402  9781848216068**  
*Control of Switching Systems by Invariance Analysis: Application to Power Electronics*  
Laurent Fribourg and Romain Soulat (Focus Series)  
ISTE/Wiley, ©2013  128 p.  $70.00  
From the preface: “We present several approaches of invariant construction based on techniques of state space decomposition and backward/forward fixed-point computation, and perform them directly on the continuous state space, or indirectly on discrete abstractions.” Material is in chapters on basic concepts of control theory, sampled switched systems, safety controllers, stability controllers, application to multilevel converters, and issues such as reachability, sensitivity, robustness, and nonlinearity. Case studies support the explanations.

**QA403  9781482221060**  
*Sinusoids: Theory and Technological Applications*  
SciTech News

Published by Jefferson Digital Commons, 2014
cations
Prem K. Kythe (Monographs and Research Notes in Mathematics)
CRC Press, ©2015 487 p. $119.95
Kythe explains periodic sine or cosine functions—sinusoids—some well-known examples from wave theory, especially the traveling and standing waves from continuous musical rhythms and from the field of medicine in the human liver. In all cases, he uses the Fourier transform to calculate the discrete set of complex amplitudes that involve the Fourier series. With that foundation laid; he discusses signals and filters; communications systems; the global positioning system; Fourier optics; X-ray crystallography; radio astronomy; acoustics, poetry, and music; and computerized axial tomography.

QA867 9781118658611
Toward Analytical Chaos in Nonlinear Systems
Albert C. J. Luo
Wiley, ©2014 258 p. $149.95
Luo sets out an analytical method for determining periodic flows and quasi-periodic flows in nonlinear dynamical systems with and without time delay. From these analytical solutions of periodic motions, he shows how to determine analytically the bifurcation trees of periodic flows to chaos. Then he explains how to achieve analytical solutions of chaos and to understand the corresponding mathematical structures. His method gives frequency-responses for nonlinear dynamical system as the Laplace transformation for linear dynamical systems.

ASTRONOMY

QB350 9781624102400
Analytical Mechanics of Space Systems, 3rd Edition
Hanspeter Schaub and John L. Junkins (AIAA Education Series)
Amer. Inst. of Aeronautics & Astronautics, ©2014 853 p. $109.95
Progressing from basic dynamic principles to advanced energy concepts, the advanced textbook introduces Newtonian mechanics, rigid body kinematics, Eulerian mechanics, analytical dynamics, and nonlinear spacecraft stability and control. The second half of the book develops equations for solving two-and three-body problems, and addresses gravity field modeling, perturbation methods, transfer orbits, and spacecraft formation flying. The third edition adds sections on deterministic attitude estimation and variable speed control moment gyroscopes, and an appendix on the MRP Kalman filter.

QB524 9781583818527
Outstanding Problems in Heliophysics: From Coronal Heating to the Edge of the Heliosphere; proceedings
In addition to the hot topic of observational and theoretical studies of the heliosphere boundaries, the 40 papers explore such areas as coronal heating of the solar wind, turbulence transport, energetic particles, planetary studies and missions, and structures and short-term and long-term variation in the near-Earth and distant solar wind environment. Among specific topics are minima of the Centennial Gleissberg Cycle and the heliospheric boundary, characteristics of magnetic flux ropes from the sun to the heliosphere, electron acceleration and spectral hardening of continuum emission in solar flares, Voyager 1 measurements and theoretical modeling of magnetized plasma near the heliopause, and analyses of the evolution and interaction of multiple coronal mass ejections and their shocks in July 2012.

QB600 9780824320423
Edited by Raymond Jeanloz and Katherine H. Freeman
Annual Reviews, ©2014 795 p. $101.00
Seismologist Hiroo Kanamori talks about falling in love with waves for this year’s memoir article. Another 29 studies span vast temporal and size scales in the Earth and planetary. Among the topics are orbital climate cycles in the fossil record from semi-diurnal to million-year biotic responses, the Stardust Mission analyzing samples from the edge of the Solar System, recent developments in using X-ray and electron microscopy and redox-sensitive methods to investigate microbe-mineral interactions, hydrogeomorphic effects of explosive volcanic eruptions on drainage basins, dinosaur growth, and the molecular and isotopic evolution of organosulfur compounds from biota to oil and gas.

QB843 9781583818466
Hot Subdwarf Stars and Related Objects; proceedings
Conference on Hot Subdwarf Stars and Related
The 42 papers cover pulsating subdwarfs and asteroseismology, atmospheric analyses, the modeling and evolution of hot subdwarfs, and hot subdwarfs in binaries. Among the topics are precision observational asteroseismology using Kepler spacecraft data, updates on the pulsating sdB star Feige 48 through spectroscopy, glimpses into the secret lives of hot subdwarf stars, tidally enhanced stellar wind in binaries as a second parameter for the horizontal branch morphology of globular clusters, hot subdwarf stars as the donors of type Ia supernova progenitors, and a radial velocity survey of hot subdwarfs with main sequence companions using the Hobby-Eberly telescope.

PHYSICS

QC52 9781938549533
COMSOL for Engineers (CD-ROM included)
Mehrzad Tabatabaian
Mercury Learning and Information, ©2014 252 p. $99.95
Tabatabaian introduces engineers and engineering students to the COMSOL modeling software package. He assumes readers are at least familiar with the principles of numerical modeling and finite element method, but suggests that they could learn them in the same course using a second textbook. Each chapter begins with an overview, background physics, and mathematical models to set the foundation, then presents the relevant modeling techniques and materials through several examples of increasing complexity, followed by problems for students to solve. The examples are from the areas of static and dynamic analysis of structures, the dynamic analysis and models of internal laminar and turbulent flows, steady and unsteady heat transfer in media, electrical circuits, and complex and multi-physics problems. Distributed in the US by International Publishers Marketing.

QC760 9781119977414
The Multilevel Fast Multipole Algorithm (MLFMA) for Solving Large-Scale Computational Electromagnetics Problems
Özgür Ergül and Levent Gürel (Ieee Press Series on Electromagnetic Wave Theory)
Wiley, ©2014 455 p. $190.00
Erfül and Gürel describe a sophisticated algorithm that has been developed and improved continuously during the past two decades for the fast and accurate solution of real-life electromagnetics problems. Writing for graduate students and researchers in the areas of computational electromagnetics, numerical analysis, and computer science, they cover basics, solutions of electromagnetic problems with surface integral equations, iterative solutions of electromagnetic problems with the multilevel fast multiple algorithm
(MLFMA), the parallelization of MLFMA for solving large-scale electromagnetics problems, and applications such as photonic crystals and scattering from red blood cells.

QC881 9780875904917  
**Modeling the Ionosphere-Thermosphere System**  
Edited by Joseph Huba, Robert Schunk, and George Khazanov (Geophysical Monograph; 201) American Geophysical Union, ©2013 340 p. $130.00  
Meteorologists, physicists, and other scientists examine large-scale numerical models to understand the complex dynamics of the ionosphere/thermosphere (IT) system from the perspectives of physical processes, numerical methods, IT models, validation of IT models, IT coupling above and below, equatorial ionospheric processes, data assimilation, and applications. The topics include solar cycle changes in the photochemistry of the ionosphere and thermosphere, traveling atmospheric disturbance and gravity wave coupling in the thermosphere, comparative studies of theoretical models in the equatorial ionosphere, inductive-dynamic coupling of the ionosphere with the thermosphere and the magnetosphere, and the model-based inversion of the auroral process. The 25 papers are from a conference in Santa Fe, New Mexico in 2009.

CHEMISTRY

QD262 9780124170346  
**Key Chiral Auxiliary Applications, 2nd Edition**  
Gregory Roos  
Academic Press, ©2014 1244 p. $275.00  
The first edition of this reference was published in 2001, in three volumes, and contained about 13,000 reaction entries; this second edition contains more than 30,000 entries and has been kept lean and useful by selective inclusion of material and exclusion of material accessible online. From the introduction: “The use of stoichiometric equivalents of chiral auxiliaries to influence the stereochemical outcome of a reaction on a covalently bonded auxiliary-substrate template began with baby steps around the mid-twentieth century.” Since the 1970s, the growth of applications has been exponential and progressively refined, and this reference will serve the chemistry community in an important and fundamental area.

QD331 9783527333431  
**Lithium Compounds in Organic Synthesis: From Fundamentals to Applications**  
Edited by Renzo Luisi and Vito Capriati  
Wiley-VCH, ©2014 545 p. $215.00  
Chemists provide new structural insights into organolithium compounds and describe synthesis methodologies based on lithium compounds that they have found to be the most innovative during the past decade. Their topics include structure-reactivity relationships in organolithium compounds, nitrogen-bearing lithium compounds in modern synthesis, the chemistry of chiral lithium amides, reductive lithiation and multi-lithiated compounds in synthesis, de-aromatization and aryl migration in organolithium chemistry, lithiated aza-heterocycles, microreactor technology in lithium chemistry, and practical aspects of organolithium chemistry.

QD341 9783527335510  
**Functionalization of Graphene**  
Edited by Vasilios Georgakilas  
Wiley-VCH, ©2014 406 p. $190.00  
Inspired by analogous chemical modification of fullerene and carbon nanotubes, researchers have performed the same with graphene to similar success. This book presents a comprehensive description of this carbon nanostructure’s characteristics, reactions, derivatives, and current and potential applications, which include tethering of antibodies, grafting of peptides and enzymes, drug delivery, gene delivery, and radioimaging and biosensing, among many others.
posites: A Practical Engineering Approach
Edited by Gennady E. Zaikov, Liliya I. Bazylak, and A.K. Haghi
Apple Academic Press, ©2014 349 p. $139.95
Contributors from the physical sciences present fundamental theoretical research concerning the conformation and deformation of polymers into solutions and melts; and review some recent developments in polymers, nanocomposites, and nanoparticles. Their topics include the number of configurations of a polymeric chain in the self-avoiding random walks statistics, phenomenological coefficients of the viscosity for low-molecular elementary liquids and solutions, simulating corrosive dissolution of PbT binary nano-cluster in acid environment of polymer electrolyte membrane (PET) fuel cells, the synthesis and anticorrosion activity of zinc phosphate nanoparticles, and an influence of kinetic parameters of reaction on the size of obtained nanoparticles under the reduction of silver ions by hydrazine. Distributed in the US by CRC Press, a member of the Taylor & Francis Group.

QD475  9781119953197
Multi Length-Scale Characterisation
Edited by Duncan W. Bruce, Dermot O’Hare, and Richard I. Walton (Inorganic Materials Series)
Wiley, ©2014 294 p. $125.00
Materials scientists and chemists examine some key methods used to investigate the structure of inorganic materials at various scales from the local atomic order through crystalline and long-range order to the mesoscopic, and the macroscopic. They cover measuring bulk magnetic properties, thermal methods, and gas sorption in the analysis of nanoporous solids, all of which deal with the bulk properties of materials; atomic force microscopy, which looks at structure on atomic length scales; and dynamic light scattering, which is used for particle sizing and provides a bridge to the new method of differential dynamic microscopy.

QD505  9781118207949
Olefin Metathesis: Theory and Practice
Edited by Karol Grela
Wiley, ©2014 592 p. $165.00
The comprehensive reference for synthetic chemists requires no deep knowledge of inorganic and coordination chemistry but provides a contemporary view of the theory and methods of olefin metathesis. The first part surveys applications and the second part describes tools. Among the topics are domino and other olefin metathesis reaction sequences, applications in the synthesis of natural and biologically active molecules, challenges and opportunities for scaling the ring-closing metathesis reaction in pharmaceuticals, immobilizing olefin metathesis catalysts, and olefin metathesis in green organic solvents and without solvent.

QD509  9781466575455
Drops and Bubbles in Contact With Solid Surfaces
Edited by M. Ferrari, L. Liggieri anf R. Miller (Progress in Colloid and Interface Science)
CRC Press, ©2013 340 p. $179.95
Chemists contribute to characterizing solid surfaces by reviewing recent research into theoretical and experimental aspects of wetting and
wettability, liquid-solid interfacial properties, and spreading dynamics. Among their topics are the kinetics of spreading and wetting by aqueous surfactant solutions, hydrodynamic interactions between solid particles at a fluid-gas interface, modeling approaches and challenges of evaporating sessile droplets, a model and the experimental study of surfactant solutions and pure liquids contact angles on complex surfaces, electrowetting ionic liquids in solid-liquid-liquid systems, and single drop impacts of complex fluids.

QD553 9789814364904
Nanomaterials for Electrochemical Sensing and Biosensing
Edited by Martin Pumera
Pan Stanford Publishing, ©2014 282 p. $149.95
Researchers active in the field review the current status and recent developments regarding nanomaterials in electrochemical and biochemical sensing processes. They cover nanoparticle-modified electrodes for sensing; multi-functional electrode arrays; carbon nanotube electrochemical detectors in microfluidics; carbon nanotube-based potentiometry; nanoparticles for DNA, protein, and cell electrochemical detection; and electrodes based on metallic and metal oxide nanoparticles. Distributed in the US by CRC Press.

QD561 9789814411851
Electrostatics of Soft and Disordered Matter
Edited by David Dean, Jure Dobnikar, Ali Naji, and Rudolf Podgornik
Pan Stanford Publishing, ©2014 428 p. $149.95
Most of the leading researchers in the electrostatics of soft material gathered for the 2012 CECAM workshop in Toulouse, and the editors seized the opportunity to organize a new compendium of the state of the art in Coulomb fluids. Physicists and chemists present 27 mini-reviews of their research into Coulomb fluids: from weak to strong couplings, ions at interfaces and in nanoconfined, complex colloids, biological systems and macromolecular interactions, and disorder effects in Coulomb interactions. Distributed in the US by CRC Press.

GEOLOGY
QE534 9783110329919
Seismic Imaging, Fault Damage and Heal
Edited by Yong-Gang Li
De Gruyter, ©2014 377 p. $182.00
Geologists and other Earth scientists survey advanced computational, observational, and interpretational seismology and geophysics for the benefit of researchers and graduate students in the geosciences. Among the topics are applications of full-wave seismic data assimilation (FWSDA), the two-way coupling of solid-fluid with discrete element model and lattice Boltzmann model, the subsurface rupture structure of the M7.1 Darfield and M6.3 Christchurch earthquake sequence viewed with fault-zone trapped waves, and the statistical modeling of earthquake occurrences based on external geophysical observations with an illustrative application to the ultralow-frequency ground electric signals observed in the Beijing region.

QE599 9781138000070
Debris Flow: Mechanics, Prediction and Countermeasures, 2nd Edition
Tamotsu Takahashi
CRC Press, ©2014 551 p. $139.95
Takahashi presents this discussion of debris flow, serving as an overview of his research in the field. Debris flow is defined and compared to other types of sediment moving phenomena, and several models of flow mechanics are covered. The initiation and development of a debris flow are described and mathematically modeled, and the mature phenomenon is characterized. Two chapters then discuss geological features and sediment runoff models that can be used to predict debris flows. The final two chapters present computer models that can reproduce the conditions of several highly destructive flow events, and preventive and protective measures. The mathematics is highly comprehensive, and a glossary of notation is included.

TECHNOLOGY (GENERAL)
T14 9781466572867
Human Factors of a Global Society: A System of Systems Perspective
Edited by Tadeusz Marek, Waldemar Karwowski, Marek Frankowicz, Jussi Kantola, and Pavel Zga-ga (Ergonomics Design and Management Theory and Applications)
CRC Press, ©2014 1149 p. $149.95
Representing the discipline of human factors and ergonomics (HF/E), 97 contributions examine individual, social, and economic developments, now and in the future. Coverage encompasses technology, psychology, management, higher education, teacher training, lifelong learning, leadership for creativity, and multicultural schools. More specifically, chapters address asymmetrical face biometrics, intelligent transportation systems, new design philosophies in architecture,
web-based resource technology and patient care, wayfinding by colors in public buildings, the organizational psychology of innovation, political marketing, and trauma in modern society—to name just a few of the widely divergent topics held within this discipline. The five editors are based, respectively, in Poland (2), the US, Finland, and Slovenia; a large number of the contributors are based in Poland, and they bring in Polish policies and case studies.

T174 9781482214826
**Nanotechnology for Sustainable Manufacturing**
Edited by David Rickerby
CRC Press, ©2014 292 p. $99.95
Chemical and materials engineers survey applications of nanotechnologies in various industrial sectors, emphasizing their contribution to sustainability. Among the topics are nanotechnology in electronics, how nanotechnologies can enhance sustainability in the agrifood sector, the biological production of nanocellulose and potential applications in agriculture and forest products, applying nanomaterials in fuel cells, solar photocatalytic drinking water treatment for developing countries, and the life-cycle assessment of nanotechnology-based applications.

T175 9781783262809
**Open Innovation Research, Management and Practice**
Edited by Joe Tidd (Series on Technology Management; Volume 23)
Imperial College Press, ©2014 447 p. $128.00
In 15 essays, business and management researchers from Europe, the US, Asia, New Zealand, and Australia examine the mechanisms that generate successful open innovation, noting that patterns of innovation differ by sector, firm, and strategy. They discuss taxonomies and modes of innovation, including ways to collaborate, open innovation strategies, and the links between open innovation and strategy; contexts and contingencies, including the impact of open innovation on new product success and the moderating role of environmental dynamics, the project level, approaches to service development, process innovations, and the international dimension of external technology sourcing; sector and industry studies of the effects of openness on the different stages of the innovation process and on performance at the firm level, the mobile phone industry, open innovation strategies data from the Dutch Community Innovation Survey, and differences in industries; and limitations and constraints, including the false dichotomy of closed and open approaches, a contingency model of inbound open innovation, and the limitations of practical application. Distributed by World Scientific.

T185 9781619252424
**Applied Science: Technology (online access included)**
Edited by Donald R. Franceschetti
Grey House Pub., Inc., ©2013 734 p. $195.00
Taken from technology articles originally published in the five volume Applied Science reference set, this book acts as an encyclopedia of technologies and how they are used in and affect everyday life. Technologies from fields as diverse as military hardware to wind power are described in its 99 entries. Each entry gives a brief summary of a specific technology, defines key terms and concepts concerning it, a description of its basic principles, its background and history, a detailed breakdown of how it works, its application, careers involving it, and a description of the future of the technology. Cross references link related articles, and each has a list of further reading for better understanding of the topic. A biography of noted scientists, a glossary of terms, and a timeline of the history of technology are included as appendices.
Neville A. Stanton, Mark S. Young, and Catherine Harvey
CRC Press, ©2014 116 p. $59.95
Working with three different in-vehicle technologies, which are multi-menu screen based systems, this book outlines how 13 different ergonomic models can be used in their evaluation. The technologies studies are touch screen, rotary controller, and remote controller, and the methods whose use are demonstrated are checklists, critical path analysis (CPA), heuristics, hierarchical task analysis (HTA), interviews, layout analysis, link analysis, observation, questionnaires, repertory grid, systematic human error reduction and prediction approach (SHERPA), task analysis for error identification (TAEI), and utility analysis. This new edition is intended to bring the work up-to-date with current in-vehicle technologies. The keystroke level model (KLM) was also replaced by CPA. A number of flow charts and diagrams are provided.

Analytical Routes to Chaos in Nonlinear Engineering
Albert C. J. Luo
Wiley, ©2014 266 p. $149.95
Using a recently developed analytical methods, Luo presents analytical routes to chaos in a few typical engineering nonlinear dynamical systems. After a literature survey of analytical methods in nonlinear dynamical systems, he covers the analytical bifurcation trees of period-m motion to chaos for Duffing oscillator, the period-m motion in the periodically forced van del Pol oscillator, the analytical bifurcation trees of period motions to chaos in the van del Pol-Duffing oscillator, the analytical solutions of period-m motions in parameteric nonlinear oscillators, and the bifurcation tree of periodic motions to chaos in a nonlinear Jeffcott rotor dynamic system.

Engineering Risk Assessment With Subset Simulation
Siu-Kui Au and Yu Wang
Wiley, ©2014 315 p. $130.00
Subset simulation is an advanced Monte Carlo technique for estimating the complementary cumulative distribution function of a response quantity of interest in a system subjected to uncertainties modeled by standard random variables or processes. The authors introduce the digital simulation of random samples according to standard distributions, the Markov Chain Monte Carlo method for generating random samples according to an arbitrarily given probability distribution, and the process for analyzing rare failure scenarios. A companion website provides VBA code for implementing direct Monte Carlo and subset simulation in Excel.

Meshless Methods and Their Numerical Properties
Hua Li and Shantanu S. Mulay
CRC Press, ©2013 429 p. $179.95
Li and Mulay present a handbook with the complete mathematical formulations for each of the most important and classic meshless analysis methods that are well known and widely accepted. Compared with the finite element method, they say, meshless methods can easily handle large deformation and strongly nonlinear problems because the connectivity between the nodes is generated as a portion of computation and it can change with time. They cover the formulation of classical meshless methods, recent developments of meshless methods, convergence and consistency analysis, stability analysis, adaptive analysis, and engineering applications.

High Performance and Optimum Design of Structures and Materials; proceedings
WIT Press, ©2014 677 p. $606.00
Most of presentations are among the 60 papers in the proceedings. They cover materials characterization, experiments and numerical analyses, composite materials and structures, green composites, composites for automotive applications, structural optimization, optimization problems, steel structures, timber structures, corrosion problems, surface modification, innovative technologies, heritage constructions, and sustainable solutions. Among specific topics are the properties of innovative mortars utilizing secondary raw material, process development for three-dimensional lithography, heat transfer analyses of natural fiber composites, some applications of reliability-based design optimization in engineering structures, insulating timber-framed walls of historical buildings using modern technologies and materials, and the effect of silica aerogel on the thermal conductivity of cement paste for con-

TA354 9781845648794
Projectile Impact: Modelling Techniques and Target Performance Assessment
Edited by S. Syngellakis
This volume collects 21 analytical and experimental studies of modeling techniques and the assessment of the impact of projectiles on various materials. Engineers and other scientists from around the world describe developments for Lagrangian algorithms applied to ballistics problems involving severe distortions; the prediction of projectile penetration and perforation; the influence of the constitutive relation in numerical simulations of the perforation of steel plates; the effect of lateral confinement on penetration efficiency as a function of impact velocity; the use of 3D numerical simulations for the interaction of long rods with moving plates; and the validation of finite element models of bullet impact on high strength steel armors. Others examine the improvement of penetration performance of linear shaped charges, the resistance of ultra-high performance fiber-reinforced concrete to projectile impact, the impact behavior of hybrid rubber materials under rifle shooting, the resistance of doped zirconia to ballistic impact, the modeling of bullet perforation of textile targets, and the impact response and ballistic performances of graphite foams. The US office of WIT Press is Computational Mechanics.

TA357 9781845647902
Advances in Fluid Mechanics X; proceedings
WIT Press, ©2014 450 p. $406.00
The 38 papers cover computer simulation and experiments, fluid-structure interaction, multiphase flow, turbulent flow, bubble and drop dynamics, nanofluids and microfluids, heat and mass transfer, hydrodynamics, porous media flow, and industrial applications. Among the topics are quantifying uncertainty in modeling and simulation for reliability certification, the numerical analysis of the flow and separation efficiency of a two-phase horizontal oil-gas separator with an inlet diverter and perforated plates, trapping micron and sub-micron particles using innovative induced-charge electrokinetic flow, the equatorial meandering of abyssal ocean currents, and electro-rheological microvalves. The US office of WIT Press is Computational Mechanics.

TA407 9783038350484
Experimental Stress Analysis and Materials Testing; Proceedings
Symposium on Experimental Stress Analysis and Materials Testing With the Occasion of 90 Years of Strength of Materials Laboratory from POLITEHNICA University Timisoara (14th: 2013: Timisoara, Romania) Edited by Liviu Marsavina (Key Engineering Materials; Volume 601)
Trans Tech Publications, ©2014 264 p. $138.00
The 59 papers cover analytical and numerical stress analysis, biomechanical applications, civil engineering applications, and the mechanical behavior of cellular materials. The topics include the fatigue response of the hybrid joints obtained by hot spot welding and bonding techniques, the mathematical modeling of cracked pre-stressed elastic composite subjected to sliding force, calculating maximum tensile shear forces in restorative materials using finite element methods, a virtual geometric model of the human lower limb, and experimental case studies of compressive strength in clay fired bricks.

TA418 9781118720899
Corrosion Engineering
Volkan Cicek
Scrivener/Wiley, ©2014 266 p. $149.00
Engineers must understand corrosion as a chemical process before proceeding with analysis, designs, and solutions, says Cicek, but must also understand it as a practical issue in daily life. Therefore, he provides a reference for both theoreticians and practitioners that can also serve as a textbook, most easily for a one-semester course. His topics include the corrosion of materials, factors influencing corrosion, the thermodynamics of corrosion, corrosion and corrosion prevention of concrete structures, metallic structures, the petroleum industry, and water transportation and storage.

TA455 9781118385111
Polyoxymethylene Handbook: Structure, Properties, Applications and Their Nanocomposites
Edited by Sigrid Lüftl, Visakh P.M., and Sarath Chandran
Scrivener/Wiley, ©2014 442 p. $195.00
Chemists and material scientists summarize recent technological and scientific developments regarding polyoxymethylene (POM), including structure, morphology, processing, and applica-
tions. The topics include the polymerization and manufacture of POM, additives, physical properties, mechanical properties, thermal properties and flammability, chemical resistance, electrical response, electrical and optical properties, nanocomposites, environmental impacts, and suppliers. Among the applications they describe are automotive, mechanical engineering, electrical and electronic devices, fancy goods, and medicine.

TA481 9781932078831
Metal Matrix Syntactic Foams: Processing, Microstructure, Properties and Applications
Edited by Nikhil Gupta and Pradeep K. Rohatgi
DEStech Publications, Inc., ©2015 352 p. $172.50
The 11 chapters in this collection describe the properties, microstructure, and synthesis of aluminum, magnesium, zinc, titanium, and iron matrix syntactic foams being developed as lightweight materials for reducing the weight of vehicles. The contributors also survey modeling and simulation methods, and compare the density, weight, strain rate sensitivity, advantages, and disadvantages of each metal foam for different applications. Black and white micrographs and images are provided.

TA492 9781118649886
A Two-Step Perturbation Method in Nonlinear Analysis of Beams, Plates and Shells
Hui-Shen Shen (Information Security Series)
Wiley, ©2013 353 p. $175.00

TA633 9781845647964
Structures Under Shock and Impact XIII; proceedings
WIT Press, ©2014 492 p. $440.00
The 41 papers cover impact and blast loading, the response of buildings to blast, computational and experimental results, the dynamic analysis of composite structures, energy absorption, and seismic behavior. Specific topics include the dynamical design of a steel frame based on the arbitrary Lagrange-Euler method, the structural response of a reinforced concrete specimen subjected to adjacent blast loading, variables affecting smooth particle hydrodynamics simulation of high-velocity flyer plate impact experiments, isolation system reliability of reinforced concrete building structures, and the seismic performance of double-unit tunnel form building under in-plane lateral cyclic loading. The US office of WIT Press is Computational Mechanics.

TA645 9783038350620
Local Mechanical Properties; select papers
International Conference on Local Mechanical Properties (10th: 2013: Kutná Hora, Czech Republic) Edited by Petr Hausild (Key Engineering Materials; Volume 606)
Trans Tech Publications, ©2014 274 p. $138.00
The 63 papers cover metals and alloys; mechanics of contact; experimental methods; biological applications; coatings and layers; and polymers, ceramics, and composites. Among specific topics are identifying stress-strain relations of aluminum foam cell wall by spherical nanoindentation, the non-destructive identification of defects on power support structure foundations by means of acoustic techniques, modeling stress distribution in a dental implant in the frontal part of the mandible, the computer nonlinear analysis of the formation and development of cracks in a traverse stone pavement exposed to bending stress caused by a single load, and inspecting post-impact fatigue damage in carbon fiber composite using the modulus mapping technique.

TA654 9781118718063
Gang Li and Kevin K.F. Wong
Wiley, ©2014 354 p. $160.00
Li and Wong examine the force analogy method, an algorithm developed in 1999 for solving nonlinear dynamic analysis problems, and its application in earthquake engineering. They cover nonlinear static analysis, nonlinear dynamic analysis, flexural member, axial deformation member, shear member, geometric nonlinearity, applying the force analogy method in modal superposition, and applications in structural vibration control. They predict that the force analogy method will significantly change the field of earthquake
Scientists at the Image Processing Systems Institute at the Russian Academy of Sciences demonstrate the fruitfulness of the well-established methods of diffraction computer optics in solving nanophotonics tasks. They cover basic equations of diffractive nanophotonics, numerical methods for diffraction theory, diffraction on cylindrical inhomogeneities comparable to the wavelength, modeling periodic diffraction microstructures and nanostructures, photonic crystals and light focusing, photonic crystal fibers, singular optics and super-resolution, and the optical trapping and manipulation of micrometer and nanometer objects.

Python is an easily-implemented, powerful and ubiquitous scripting language available on all major platforms (and many minor ones!). This rigorous textbook provides an introduction to image processing and analysis using Python, grounded in mathematics. A short introduction to Python programming and an overview of the usage of modules in it is followed by two major sections. The first one concentrates on image processing and includes discussions of spatial filters, image enhancement, Fourier transforms, morphological operations and image measurement problems. The second part, focusing on image acquisition, discusses tomography and MRI, use of light and electron microscopes. Both parts are mathematically rigorous and include plenty of sample code, much of which is directly usable, to illustrate specific solutions. Appendices on Python installation, parallel programming using Python with MPI4Py mode, a primer in ImageJ (another Python module) and a discussion of using NumPy module’s functions in MATLAB round out this useful volume.

ETC

ENVIRONMENTAL TECHNOLOGY

Written by a leading professional expert in the field and the editor-in-chief of the international, peer-reviewed Environmental Forensics Journal, this is a textbook introducing the field of environmental forensics to train students and professionals with some background in chemistry for this career. Though it has highly technical sections, the writer is an expert in giving technical testimony to juries of non-professionals, and the text is much more accessible than most technical books. It will have secondary use for writers, environmental activists, and others interested in how professionals use forensic crime scene investigation in cases involving environmental toxins. Section one covers evidence. Section two discusses the various techniques of investigation; non-testing (analyzing photographs, records searches, and so on) and testing (chemical fingerprinting, tree-ring data, DNA fingerprinting, and so on). Section three is investigative case studies of actual cases the author was involved in. For a range of different types of environmental forensics cases, they show the strategic plan, how the investigation worked, the data results, and how the author used them to solve the mystery. They range from determining exactly how much a foundry polluted a site with toxic metals to whether one neighbor put poison in another’s yard.
TD196  9781466517455
Pharmaceutical Accumulation in the Environment: Prevention, Control, Health Effects, and Economic Impact
Edited by Walter E. Goldstein
CRC Press, ©2014 236 p.  $129.95
Environmental scientists and regulatory personnel describe the extent and effects of pharmaceutical contamination, and suggest ways to solve the problem. Their topics include an insight into the discovery of the contamination of the environment and drinking water by pharmaceuticals, the presence and fate of pharmaceuticals in the environment and in drinking water, the history of detecting pharmaceuticals in the environment as a forensic tool, effects of antibiotics on biological wastewater treatment processes, and opportunities and costs of minimizing wastewater pharmaceuticals.

TD353  9781466594746
Information Needs for Water Management
Jos G. Timmerman
CRC Press, ©2014 221 p.  $99.95
His 2011 PhD dissertation was a scientifically sound endeavor, says Timmerman, and he has transformed it into a practical guide on applying the methodology he developed to useful work in water management. Some technical information is provided in optional boxes, but for details, readers must go to his references. He sets out to develop the reader's understanding of the role and use of information in decision making in the context of water management, and describes a structured approach to specifying information needs. His topics are the link between monitoring and water management, how to develop the process, analyzing the water management situation, transforming water policy into information needs, and the next steps.

TD758  9781138001275
Advanced Oxidation Technologies -- Sustainable Solutions for Environmental Treatments
Edited by Marta I. Litter, Roberto J. Candal, and J. Martin Meichtry (Sustainable Energy Developments; Volume 9)
CRC Press, ©2014 348 p.  $159.95
Chemists and other scientists examine state-of-the-art advanced oxidation technologies and their use in sustainable, low-cost and low-energy treatments for water, air, and soil. The topics include decontaminating water by solar irradiation, degrading perchlorate dissolved in water by a combined application of ion exchange resin and zero-valent iron nanoparticles, decontaminating commercial chlorpyrifos in water using the ultraviolet/hydrogen peroxide process, modified montmorillonite in photo-Fenton and adsorption processes, stabilized titania nanoparticles on clay minerals for air and water treatment, and the photodegradation of beta-blockers in water.

TE278  9781466575103
Concrete Pavement Design, Construction, and Performance, 2nd Edition
Norbert J. Delatte
CRC Press, ©2014 421 p.  $139.95
Delatte updates his broad reference on concrete pavement for students, teachers, researchers, and practicing engineers to reflect current practices, standards, and technology. His topics include types of concrete pavements, the sustainability of concrete pavements, selecting concrete materials, mixture design and proportioning, a mechanistic-empirical pavement design guide, pervious concrete pavements, airport pavement design, roller-compactcd concrete pavements, subgrade and sub-base construction, rehabilitation, and overlays and inlays.

SciTech News
http://jdc.jefferson.edu/scitechnews/vols8/iss4/1
Mechanical engineer designer Richards has been building his personal reference library of design information for many years, and here shares with colleagues and students what he has collected. He covers mathematics such as trigonometry and differential and integral calculus, introduction to numerical methods, properties of sections and figures, statics or forces in frameworks, dynamics with a concentration on kinematic analysis, the essentials of mechanical vibrations, modeling individual elements of control systems, heat conduction and thermal expansion, thermodynamics basics, fluid mechanics, and introductory four-bar linkages.

**Impingement Jet Cooling in Gas Turbines**
Edited by Ryoichi S. Amano and Bengt Sundén
(Developments in Heat Transfer; Volume 25)
WIT Press, ©2014 231 p. $216.00
Mechanical, aeronautical, and other engineers present a thorough treatment of the technique for university instructors and graduate students and research engineers and scientists. They cover the design, applications, and limitations of impingement cooling in gas turbines, impingement jet cooling with different stand-off distances for single-exit and double-exit flows; recent developments in impingement array cooling, including consideration of the separate effects of Mach number, Reynolds number, temperature ratio, hole spacing, and jet-to-target-plate distance; impingement cooling for combustion liner backside cooling; impingement/effusion cooling methods in gas turbines; the flow control of impingement jets and wall jets; the numerical simulation of heat transfer from impinging swirling jets; and an experimental and numerical study of heat transfer enhancement of impingement jet cooling by adding ribs on target surface. The US office of WIT Press is Computational Mechanics.

Wenyuan Li (Ieee Press Series on Power Engineering)
IEEE/Wiley, ©2014 529 p. $135.00
Since he wrote the first edition, the power industry has integrated renewable power into the mix, and introduced smart grids, says Li, and he adds results of his own research and that of others on those areas and other areas that have changed. Among his topics are outage models of system components, risk evaluation techniques for power systems, applying risk evaluation to selecting substation configurations, the risk evaluation of wide area measurement and control systems, asset management based on condition monitoring and risk evaluation, and voltage instability risk assessment and its application to system planning.

**Advanced DC/AC Inverters: Applications in Renewable Energy**
Fang Lin Luo and Hong Ye (Power Electronics, Electrical Engineering, Energy, and Nanotechnology)
CRC Press, ©2013 308 p. $159.95
After describing traditional pulse-width modulation (PWM) inverters, this technical guide introduces new quasi-impedance source inverters, soft-switching PWM inverters, multilevel DC/AC inverters, trinary hybrid H-bridge multilevel inverters, laddered multilevel inverters, super-lift modulated inverters, switched capacitor inverters, and switched inductance inverters. Methods for determining the best switching angles help obtain the lowest total harmonic distortion, and two examples illustrate the design of a wind turbine system and a solar panel energy system.

**Electrochemically Enabled Sustainability: Devices, Materials and Mechanisms for Energy Conversion**
Edited by Kwong-Yu Chan and Chi-Ying Vanessa Li
Chemists, materials scientists, and mechanical engineers explore ways to store electricity in chemical form, then convert it to end use with electrochemical technologies. Their topics include microbial fuel cells and other bio-electrochemical conversion devices, hollow mesoporous carbon with hierarchical nanoarchitecture in electrochemical energy storage and conversion, a first-principles approach to cathode design and characterization, lead-carbon hybrid ultra-capacitors and their applications, physical properties of negative half-cell electrolytes in the vanadium redox flow battery, and pH differential power sources with electrochemical neutralization.

TK2931 9783527333240
**Non-Noble Metal Fuel Cell Catalysts**
Edited by Zhongwei Chen, Jean-Pol Dodelet, and Jiujun Zhang
Wiley-VCH, ©2014 428 p. $205.00
Specialists in fuel cell technology provide information on non-noble metal electrocatalysts for oxygen reduction reactions in both acid and alkaline polymer electrolyte membrane (PEM) fuel cells. For acid PEM cells, they consider heat-treated transition metal NxCy; modified carbon materials; transitional metal chalcogenides; and transition metal oxides, carbides, nitrides, oxynitrides, and carbonitrides. For alkaline fuel cells, the materials are carbon composite cathode catalysts, and non-precious metal oxides and metal carbides. Other topics are the theoretical modeling of non-noble metal electrocatalysts for acid and alkaline PEM fuel cells, membranes for alkaline polyelectrolyte fuel cells, and automotive applications of alkaline membrane fuel cells.

TK3105 9781482206111
**Smart Grids: Clouds, Communications, Open Source, and Automation**
Edited by David Bakken and Krzysztof Iniewski (Devices, Circuits, and Systems)
CRC Press, ©2014 446 p. $99.95
Electrical engineers and computer scientists offer power engineers, information technology workers in the electricity sector a snapshot of the current art and practice of smart grids. A special focus is the new kinds of communications and computations enabled or necessitated by smart grids. The topics include emerging wide-area power applications with mission-critical data delivery requirements, open source software as an enabling technology for smart grid evolution, photovoltaic energy generation and control for an autonomous shunt active power filter, load data cleansing and bus load coincidence factors, and a vision of future control centers in smart grids.

TK6565 9781608071180
**Understanding Quartz Crystals and Oscillators**
Ramón M. Cerda (Artech House Microwave Library)
Artech House, ©2014 299 p. $179.00
Cerda presents this detailed text on quartz crystal oscillators, beginning with an introduction to the discovery, crystal structure, and thermal and electrical properties of quartz. The concepts and mathematics of resonance and MEMS oscillators are presented, followed by advice on crystal choice for given applications and coverage of oscillator theory, phase noise, and jitter. Specifications of crystal oscillators are discussed and the Pierce-Gate, Colpitts, and Butler designs are described. The final four chapters focus on the issues of characterization, frequency multiplication, telecommunications requirements, and testing.

TK6570 9780470740583
**Mobility Protocols and Handover Optimization: Design, Evaluation and Application**
Ashutosh Dutta and Henning Schulzrinne
IEEE/Wiley, ©2014 442 p. $125.00
Dutta and Schulzrinne introduce networking professionals to mobility protocols for different layers of mobile networks, to the systematic analysis of the mobility event, and to optimization techniques associated with each of the handoff operations in different layers. They take into account various kinds of mobility deployment scenarios, including wireless service providers, enterprise networks, ad hoc networks, and vehicular networks supporting both unicast and multicast traffic. They also present results and performance analysis from mobility test beds and theoretical models that validate the optimization techniques for various scenarios.

TK6573 9781608077151
**Ultrawideband Antennas for Microwave Imaging Systems**
Tayeb A. Denidni and Gijo Augustin (Artech House Antennas and Propagation Series)
Artech House, ©2014 199 p. $179.00
Electronic engineers Denidni and Augustin begin with a brief history of microwave technology, some fundamental definitions about fields and waves, and antenna basics including standard definitions of various terms. Then they cover microwave imaging systems, ultrawideband technology, planar ultrawideband antennas for imaging systems, dielectric resonance antennas for microwave im-
aging, ultrawideband antenna characterization techniques, and the regulation of microwave imaging. Among detailed discussions are the interaction of microwaves with biological tissues, the pulse waveform for ultrawideband transmission, a compact hybrid antenna for wideband applications, characterization in frequency domain, and ground penetrating radar systems.

TK6578 9781466576780
*Electromagnetic Wave Scattering by Aerial and Ground Radar Objects*
Edited by Oleg I. Sukharevsky
CRC Press, ©2015 288 p. $169.95
A team of Ukrainian radio engineers and mathematicians present results of their research for scientists and engineering working in radar and computational electrodynamics. They generalize several key postulates of classical electrodynam- ic theory to provide a foundation upon which they then develop the methods for computing radar object scattering. They cover the elaboration of scattering electrodynamic theory: studying secondary radiation from radar targets, methods for computing scattering characteristics of complex-shaped objects, and scattering characteristics of some airborne and ground objects.

TK6592 9781608076659
*Highly Integrated Low-Power Radars*
Sergio Saponara, Maria Greco, Egidio Ragonese, Giuseppe Palmisano, and Bruno Neri (Artech House Radar Series)
Artech House, ©2014 215 p. $149.00
A team of electronic engineers contend that radar—properly designed to minimize its power consumption, size, and cost—has the potential to become a ubiquitous contactless sensor for large market applications in the near future. They discuss scenarios, applications, and requirements for highly integrated low-power radar; radar integration levels, technology trends, and transceivers; hardware-software implementation platforms for radar digital signal processing; a signal processing perspective on radar for electronic health applications and automotive applications; implementation examples of low-power radar front-end electronic health and harbor surveillance; and automotive radar integrated circuit designs with 24-GHz UWB and 77-GHz FMCW implementation examples.

TK7871 9780470686003
*Smart Sensor Systems: Emerging Technologies and Applications*
Edited by Gerard Meijer, Michiel Pertijs, and Kofi Makinwa
IEEE/Wiley, ©2014 279 p. $105.00
Electrical engineers present a reference for designers and user of sensors and sensor systems, and a source of inspiration and a trigger for new ideas. One goal is to establish a uniform terminology that can be used across discipline boundaries. They cover smart sensor design, the calibration and self-calibration of smart sensors, precision instrumentation amplifiers, dedicated impedance-sensor systems, low-power vibration gyroscope readout, DNA microarrays based on complementary metal-oxide semiconductors (CMOS), CMOS image sensors, exploring smart sensors for neural interfacing, and principles and applications of micropower generation.

TK7881 9781118634035
*Power Electronics for Renewable Energy Systems, Transportation and Industrial Applications*
Edited by Haitham Abu-Rub, Mariusz Malinowski, and Kamal Al-Haddad
IEEE/Wiley, ©2014 795 p. $175.00
Twenty-four chapters offer a state-of-the-art review of this complex, many-faceted subdiscipline of electrical engineering that incorporates recent developments in related fields such as control theory, signal processing, applications in renewable energy systems, smart grids, and the technology of electric and plug-in hybrid vehicles. Contributors incorporate their current research into treatment of various aspects of power electronics’ impact and implications for emerging technologies, and power electronics for distributed power generation systems and for transportation and industrial applications.
ance, navigation, and control; mixed actuator attitude control; hardware in the loop (HWIL) testbeds and demonstration laboratories; and recent experiences. Among specific topics are mission considerations for direct transfers to a distant retrograde orbit, miniature control moment gyroscope development, hosting the deep space atomic clock (DSAC) on the orbital test bed (OTB-1) satellite, Orion sample capture and return, system level HWIL testing for cubesats, and a unified simulation and analysis framework for deep space navigation design. Published by Univelt for the American Astronautical Society.

TL796 9781118636473
Anil K. Maini and Varsha Agrawal
Wiley, ©2014 822 p. $160.00
This is a thorough overview of aerospace technology relevant to satellite applications, complete and comprehensive and suitable as a general introduction to the field. A short introduction is followed by a concise but rigorous study of orbits, after which the authors cover several major topics: launch and orbital operations, basic hardware (including major significant subsystems: mechanical, propulsion, thermal control and power supply, attitude and orbit control, tracking, telemetry, command, payloads and antennas) and an in-depth treatment of communication techniques, multiple access techniques and satellite link design. The first part concludes with an overview of Earth station issues and an introduction to networking concepts. The second part provides descriptions of major satellite applications: communications, remote sensing, weather and navigation, scientific satellites and military satellites, including specific military applications in weather and navigation and several other purposes covered earlier in different context. Future trends are the subject of the concluding chapter, including space tethers, aerostats and more generally, space stations. A website accompanies the text, containing a constantly updated list of satellites and launch vehicles.

TL1075 9781118853870
Low-Energy Lunar Trajectory Design
Jeffrey S. Parker and Rodney L. Anderson (Deep Space Communications and Navigation Series)
Wiley, ©2014 396 p. $149.00
Parker and Anderson provide mission managers and designers with high-level and detailed information about low-energy transfers between the Earth and the Moon, including lunar libration orbits, low-lunar orbits, and the lunar surface. The surveys include conventional, direct transfers that require three to six days as well as more efficient, low-energy transfers that require more transfer time but less fuel. Low-energy transfers have recently been used to send satellites to the Moon, including the two ARTEMIS spacecraft and the two GRAIL spacecraft.

CHEMICAL TECHNOLOGY

TP968 9781605950969
The Mechanics of Adhesives in Composite and Metal Joints: Finite Element Analysis With ANSYS
Magd Abdel Wahab
DEStech Publications, Inc., ©2014 216 p. $129.50
Appropriate for both graduate students and practicing engineers, this guide introduces ANSYS commands for modeling stress, fracture, fatigue crack propagation, heat transfer, and diffusion of moisture in adhesively bonded composite and metallic joints. The opening chapters explains the classification of industrial adhesives, and review relevant aspects from the theory of plasticity, fracture mechanics, the cohesive zone model, diffusion theory, and the finite element analysis of structural mechanics problems. The publisher’s website contains the ANSYS input files from the examples.

MILITARY & NAVAL SCIENCE

U163 9781421414126
Great Powers, Small Wars: Asymmetric Conflict Since 1945
Larisa Deriglazova
Woodrow Wilson Ctr. Press, ©2014 384 p. $60.00
In her study of asymmetric conflict (a larger, better equipped power at war with a smaller adversary), Deriglazova focuses primarily on one particular type: conflict in which a weaker power is able to politically defeat the larger one. The author relies on quantitative research and two detailed case studies to define characteristics, patterns, and that particular type of asymmetric conflict since World War II. General topics include: origin and development of the asymmetric conflict concept, identifying the asymmetric factor in armed conflicts, the dissolution of the British empire and asymmetric conflicts in dependencies, and the
U.S. was in Iraq (2003-2011). The author then follows with a conclusion on analyzing asymmetric conflicts using the model established.

A Chinese research team looking for information about SER geolocation presents in a systematic order information they have managed to gather. Their topics include fundamentals of satellite orbit and geolocation, single-satellite geolocation systems based on direction finding, dual-satellite geolocation based on time difference of arrival (TDOA) and frequency difference of arrival (FDOA), satellite-to-satellite passive orbit determination by bearings only, and satellite-to-satellite passive tracking based on angle and frequency information.

**Network Topology in Command and Control: Organization, Operation, and Evolution**
T. J. Grant, R.H.P. Janssen, and Monsuur (Advances in Information Security, Privacy, and Ethics)
Information Science Reference, ©2014 320 p. $215.00
Researchers in computer science and engineering, mathematics, the physical sciences, and other fields explore the intersection between network science and command and control in a way they intend to be accessible to readers in each field. The topics include shaping comprehensive emergency response networks, modeling command and control in networks, formalized ontology for representing command and control systems as layered networks, improving command and control effectiveness based on robust connectivity, complex adaptive information networks for defense, and cyber security in tactical network infrastructure for command and control.

**Manual of Security Sensitive Microbes and Toxins**
Edited by Dongyou Liu
CRC Press, ©2014 860 p. $199.95
Editor Liu offers this comprehensive volume on microbes and toxins that carry the danger of being exploited as bioweapons, with 74 chapters following the introduction each profiling a specific strain. Sections divide the material into viruses, bacteria, fungi and parasites, and isolated toxins affecting humans, as well as animal viruses and bacteria and a section on plant pathogens. Each chapter covers the biological mechanism of each microbe or toxin, epidemiology, clinical presentation and diagnosis, and treatment and prevention, including novel research that is promising but not yet ready for application and recommendations for bodies such as the CDC and WHO to help limit spread.

**Space Electronic Reconnaissance: Localization Theories and Methods**
Fucheng Guo, Yun Fan, Yiyu Zhou, Caigen Zhou, and Qiang Li
Wiley, ©2014 357 p. $149.95
Because space electronic reconnaissance (SER) is used mostly in warfare, details of the technology are generally confidential and difficult to find.
archives initiative repositories, facilitating access and reuse of research materials: the case of The European Library, whether openness and open access policy relate to the success of universities, and a feasibility study of an electronic publishing library service in humanities and social sciences. Full texts of the papers abstracted here are available online.

Z678  9780838912263
Useful, Usable, Desirable: Applying User Experience Design to Your Library
Aaron Schmidt and Amanda Etches
ala editions, ©2014  168 p.  $65.00 (pa)
The authors offer advice and guidance as to how a library can use user experience (UX) design to promote better and greater use. The text begins by defining UX design and explaining the rationale behind this particular design theory. There is then instruction as to how to utilize the book and a short chapter discussing the authors’ research methods. Each chapter is broken down into more specific areas of interest within its general subject. The text offers a chapter about how to use the library’s physical space to maximize user needs, such as computer space and service desks. The text also discusses customer service and policy issues. Signage is discussed. The text also includes a large chapter discussing a library’s online presence. Finally, the text concludes by offering thoughts on the library culture and philosophy.

Z701  9781856049580
Preserving Complex Digital Objects
Edited by Janet Delve and David Anderson
Facet Publishing, ©2014  375 p.  $115.00 (pa)
In 25 essays from a symposium series, librarians, information scientists, and artists work toward defining and describing the effective preservation of complex visual digital materials, and toward developing recommendations for practice. They cover why and what to preserve: creativity versus preservation; the memory institution/data archival perspective; digital preservation approaches, practice, and tools; case studies; and legal perspectives. Among specific topics are concerning the value of redundancy as a creative strategy, preserving games for museum collections and public displays: the National Videogame Archive, metadata for preserving computer environments, a practical implementation for preserving complex cultural heritage objects, and issues of information security applicable to the preservation of digital objects. Distributed in the US by Neal-Schuman.

Z6658  9780838911846
Introduction to Reference Sources in the Health Sciences, 6th Edition
Edited by Jeffrey T. Huber and Susan Swogger (Medical Library Association Guides)
Neal-Schuman, ©2014  468 p.  $115.00 (pa)
Editors Huber and Swogger present the sixth edition of this health sciences reference source compilation, updated to reflect increasing electronic resources and include an introduction on health information seeking behaviors as well as two new chapters at the end of part IV. Following the introduction, Part II discusses organization and management of a reference collection. Part III discusses verifying, locating, and selecting different types of bibliographic sources including monographs, periodicals, government and technical documents, conference proceedings, and translated works, as well as using databases and electronic access. Finally, Part IV addresses finding information on specific topics, first touching on terminology, and then covering handbooks and manuals, drug information, consumer health sources, statistical information, historical information, biographies, grant sources, point-of-care and clinical decision support, and global health sources.

Z7164  9780838912348
Guide to Reference in Business and Economics
Edited by Steven W. Sowards and Elisabeth Leonard
ala editions, ©2014  276 p.  $65.00 (pa)
This resource contains annotations of economics and business reference books, organizations and associations, internet resources, periodicals, and other resources, based on the Economics and Business portion of the American Library Association’s online Guide to Reference. It contains about 800 entries on general works, economic conditions and world trade, international information for various regions, functional areas of business, company and basic industry information, specialized industry information, and occupations and careers. Each includes bibliographic information, a description, an ISBN for printed works, and a website for online content or the publisher’s website, where applicable. The guide has been updated to add new or expanded content on the financial crisis of 2008 and the resulting recession, unions and human resources, real estate and mortgages, consumer information, Islamic economics, entrepreneurship, and US trade with Canada, China, and Mexico.
2014 Engineering Division Officers and Board

Chair
Andrew Shimp
Yale University Libraries
15 Prospect Street
New Haven, CT 06520-8284
andrew.shimp@yale.edu

Chair-Elect
Kati Arzeta
CH2M Hill
Kati.Arzeta@ch2m.com

Past Chair
Penny S. Sympson, Corporate Librarian
Wiss, Janney, Elstner Associates, Inc.
330 Pfingsten Road
Northbrook, IL 60062
psymphson@wje.com

Secretary
Giovanna Badia
McGill University Libraries
6349 Val-marie
Saint-leonard, QC H1P1C9
Canada
giovanna.badia@mcgill.ca

Treasurer
Diane F. Brenes, Library Services
The Boeing Company
Huntington Beach, CA 92647
diane.f.brenes@boeing.com

Action Planning Co-Chairs
Danielle Harrison
MPR Library
dharrison@mpr.com

Maureen Kimball
Raytheon Company
Maureen_L_Kimball@raytheon.com

Awards Chair
Taya Cagle
The Boeing Company
taya.cagle@boeing.com

Architecture, Building, Construction and Design Section Chair
Joan Cunningham
Regional Librarian
Simpson, Gumpertz and Heger
Waltham, MA
JCunningham@sgh.com

Archivist
Vanessa Eyer
Penn State Engineering Library
vid5011@psu.edu

Membership
G. Lynn Berard
Carnegie Mellon University Libraries
4402 Wean Hall
Pittsburgh, PA 15213-3890
lberard@andrew.cmu.edu

Mentoring Chair
Ashleigh Faith
SAE International
afaith@sae.org

Professional Development Chair
Daureen Nesdill
J.W. Marriott Library
University of Utah
295 S. 1500 E.
Salt Lake City, UT 84112-0860
daureen.nesdill@utah.edu

Web Master
Dale Copps
Creare Inc
16 Great Hollow Road
Hanover, NH 03755
dgc@creare.com

Conference Program Planner (2015, Boston)
Penny Sympson
psymphson@wje.com

Conference Program Planner (2016, Philadelphia)
Niamh Tumelty
nt311@cam.ac.uk
List Administrator
Marge Rhodes
rhodesms@westinghouse.com

Fundraising Chair
Patricia Aspinwall
aspinwall@rogers.com

Strategic Planning Chair
Karen A. Vagts, Engineering/Business Librarian
Tisch Library, Tufts University
35 Professors Row
Medford, MA 02155
kvagts@earthlink.net

Aerospace Section

Chair
Edna Paulson
ewp1128@gmail.com

Chair-Elect
Mary Whittaker
Boeing Company
mary.s.whittaker@boeing.com

Past Chair
Mary Strife, Director
West Virginia University, Evansdale Library
PO Box 6105
Morgantown, WV 26506
mary.strife@mail.wvu.edu

2014 Chemistry Division Executive Board

Chair
Valerie Tucci
The College of NJ
2000 Pennington Rd.
Ewing, NJ 08628
609-771-2016
vtucci@tcnj.edu

Chair Elect
Ye Li
University of Michigan

3162 Shapiro Science Lib
Ann Arbor MI 48109
734-615-5694
liye@umich.edu

Past-Chair / Nominating Committee Chair
Susan Makar
NIST
100 Bureau Dr.
Gaithersburg, MD 20899
301-975-3054
susan.makar@nist.gov

Secretary
Linda Galloway
Syracuse University
104 Carnegie Bldg
Syracuse, NY 13244
315-450-1027
galloway@syr.edu

Treasurer
Yan He
Indiana University Kokomo Library
2300 S. Washington Street
Kokomo, IN 46902
765-455-9249
yh4@iuk.edu

2014 Chemistry Division Advisory Board

ACS Liaison
Judith Currano
University of Pennsylvania Libraries
currano@pobox.upenn.edu

Archivist
Luray Minkiewicz
E I DuPont De Nemours Co.
Experimental Station
luray.m.minkiewicz@usa.dupont.com

Membership
Dawn French
Cristal
dawn.french@cristal.com
Awards
Claire Stokes
3M Company
cstokes@mmm.com

List Owner
Meredith Ayers
Northern Illinois University
mayers@niu.edu

MRM Section Past Chair
Meghan Gamsby
gamsbyn@gmail.com

Mentoring
Denise Callihan
PPG Industries Inc.
callihan@ppg.com

Planner (Co) for 2015
Amanda Schoen
Sherwin-Williams Co
amanda.schoen@sherwin.com

Professional Development
Ted Baldwin
University of Cincinnati
baldwitw@ucmail.uc.edu

Sponsorship
William Armstrong
Louisiana State University Libraries
notwwa@lsu.edu

Strategic Planning
Cory Craig
UC Davis
cjCraig@ucdavis.edu

Webmaster
Amanda Schoen
Sherwin-Williams Co
amanda.schoen@sherwin.com

Chair-Elect
Sheila Rosenthal
SLR@sei.cmu.edu

Past-Chair
Helen Josephine
helenj@stanford.edu

Secretary
Anna Ren
annawu@northwestern.edu

Treasurer
Thea Allen
theaallen@gmail.com

2014 Science and Technology Division Advisory Board

Archivist
Roger E. Beckman
BeckmanR@indiana.edu

Auditor
Ariel Vanderpool

Awards Committee Chair
Janet Hughes
Jah11@psu.edu

Awards Committee Members
Kathy Nordhaus
Debal Chandra Kar
P.K. Jain
Susan Powell
Cynthia Cohen
Geeta Paliwal
Shantanu Ganguly
Simon Barron

Communications Committee Chair
Heather Lewin
hslewin@iastate.edu

Communications Committee Members
Jeremy Cusker (STN Editor)
Margaret Smith (Webmaster)

Conference Program 2014 Planner
Nevenka Zdravkovska
nevenka@umd.edu
e-Discussion Listserv Manager
vacant

Governing Documents Committee Chair
Helen Josephine
helenj@stanford.edu

Government Relations Committee Chair
Karen Buxton
Karen.Buxton@pnl.gov

International Relations Committee Chair
Sheila Rosenthal
SLR@sei.cmu.edu

Membership Committee Chair
Anna Ren
annawu@northwestern.edu

Membership Committee Members
Emily MacKenzie
Sara M. Samuel

Nominating Committee Chair
Cheryl Hansen
cahansen@esi-il.com

Parliamentarian
vacant

Public Relations Committee Chair
Bill Jacobs
billjac@miami.edu

Public Relations Committee Members
Thea Allen
Portia McQueen

Professional Development Committee Chair
Mary Frances Lembo
MF.Lembo@pnnl.gov

Professional Development Committee Members
Darra Ballance
Dr. P.K.Jain
Jennifer Robbins
Susan Wainscott

Strategic Planning Committee Chair
Sue Brewsaugh
sue.brewsaugh@boeing.com

Strategic Planning Committee Members
Dorothy McGarry
Helen Kula
Vic Deem
Rebecca Kuglitsch
Christy Peters
Hilary Davis
Ann Koopman
Joe Kraus
Bonnie Osif
Marilyn Caporizzo
Patricia Pereira-Pujol
Wilda Bowers Newman
Cheryl Hansen
Samantha Ruimy
Elisabeta Cosarca

Student Relations Committee Chair
Heather Lewin
hslewin@iastate.edu

Student Relations Committee Members
Michele Hadburg
Rebecca Miller
Sarah Oekler
Susan Powell

Fundraising Chair
Helen Josephine
helenj@stanford.edu

Vendor Relations Committee Members
Anna Ren

Web Master
Margaret Smith
margaret.smith@nyu.edu

2014 Science and Technology Division Liaisons

ALA/ACRL Science & Technology Section Liaison
Janet Hughes
jah19@psu.edu
<table>
<thead>
<tr>
<th>SLA on the Web: <em>SciTech News</em> Division Websites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chemistry Division</strong></td>
</tr>
<tr>
<td>Home Page: <a href="http://chemistry.sla.org">http://chemistry.sla.org</a></td>
</tr>
<tr>
<td>Discussion List Instructions:</td>
</tr>
<tr>
<td>Send an e-mail to: <a href="mailto:Lyris@lists.sla.org">Lyris@lists.sla.org</a>. In the body of the message: Subscribe sla-dche &lt;your e-mail address&gt; &lt;FirstName&gt; &lt;LastName&gt;</td>
</tr>
<tr>
<td><strong>Chemistry Division - MRM Section</strong></td>
</tr>
<tr>
<td>Home Page: <a href="http://chemistry.sla.org/mrm">http://chemistry.sla.org/mrm</a></td>
</tr>
<tr>
<td>Discussion List Instructions:</td>
</tr>
<tr>
<td>Send an e-mail to: <a href="mailto:Lyris@lists.sla.org">Lyris@lists.sla.org</a>. In the body of the message write only: Subscribe SLA-DMRM &lt;your e-mail address&gt; &lt;FirstName&gt; &lt;LastName&gt;</td>
</tr>
<tr>
<td><strong>Engineering Division</strong></td>
</tr>
<tr>
<td>Home Page: <a href="http://engineering.sla.org">http://engineering.sla.org</a></td>
</tr>
<tr>
<td>Discussion List Instructions:</td>
</tr>
<tr>
<td>Send a message to <a href="mailto:lyris@sla.lyris.net">lyris@sla.lyris.net</a> in the following format: Leave the Subject line blank. In the body, type: Subscribe SLA-DENG your-e-mail_address “FirstName LastName” (e.g. Subscribe SLA-DENG <a href="mailto:johndoe@gmail.com">johndoe@gmail.com</a> “John Doe”)</td>
</tr>
<tr>
<td><strong>Engineering Division - Aerospace Section</strong></td>
</tr>
<tr>
<td>Discussion List Instructions:</td>
</tr>
<tr>
<td>Send an e-mail to: <a href="mailto:Listserv@sti.nasa.gov">Listserv@sti.nasa.gov</a>. Leave the subject line empty. In the body of the message write only: Subscribe SLA-AERO Your_Name</td>
</tr>
<tr>
<td><strong>Science-Technology Division</strong></td>
</tr>
<tr>
<td>Home Page: <a href="http://scitech.sla.org">http://scitech.sla.org</a></td>
</tr>
<tr>
<td>Discussion List Instructions:</td>
</tr>
<tr>
<td>Send an e-mail to: <a href="mailto:lyris@sla.lyris.net">lyris@sla.lyris.net</a>. In the body of the message: Subscribe sla-dst &lt;your e-mail address&gt; &lt;FirstName&gt; &lt;LastName&gt;</td>
</tr>
</tbody>
</table>