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The Newsletter for Marshall University

February 22, 2017

Marshall University researchers receive U.S. patent to treat one of world's major health issues



Researchers at Marshall University have developed a method for treating sepsis, one of the world's major health problems, and other inflammatory disorders using cerium oxide nanoparticles (CeO2 NPs.)

The researchers have been awarded a U.S. patent for the method and associated applications, which are now available for licensing through the Marshall University Technology Transfer Office.

Eric Blough, Ph.D. (left), a professor at the school of

pharmacy, said the novel method of cerium oxide nanoparticles application opens up new doors to treat sepsis and other disorders including alcoholic liver disease and the inflammation seen after trauma, severe burns or spinal injury.

"Sepsis is a serious complication caused by the body's overwhelming response to infection, which can lead to tissue damage, multi-organ failure and death," Blough said. "Current treatment strategies, which include the use of antibiotics, fluid resuscitation and additional support based on the symptoms, fail to address the needs of patients adequately. With the increase in antibiotic resistance and emergence of multidrug resistant pathogens, current treatment modalities are increasingly being challenged. Our method for treating sepsis using cerium oxide nanoparticles addresses this aptly without any potential concern for antibacterial resistance."

Nandini D.P.K. Manne, Ph.D. (right), a researcher at Marshall's Center for Diagnostic Nanosystems and lead author on several of the publications generated from the research, said the dependence on nanomaterials in our day-to-day life for non-medical applications is increasing at a tremendous rate, but the biomedical application of these materials is still in its infancy.

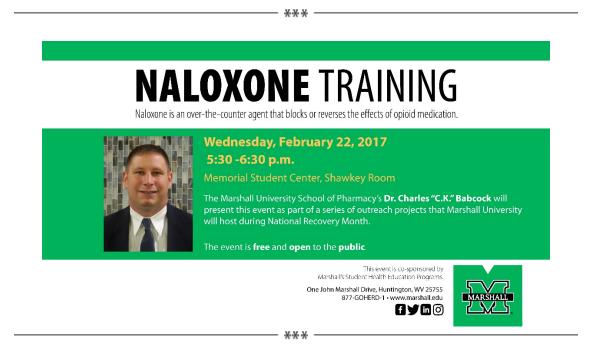
"Our method shows that nanoparticles can be used to treat sepsis effectively," Manne said. "One major advantage is the lack of necessity for any refrigeration and long shelf life, which suggests that cerium oxide nanoparticles may be ideal for treating sepsis in resource-poor environments where proper medical and storage facilities are totally lacking. The biological applications of

cerium oxide nanoparticles are enormous and could be used to address many unmet medical needs."

The treatment, researchers say, involves the nanoparticles being injected into a vein after which they passively target liver Kupffer cells and exert the beneficial effects.

Cerium oxide is widely used as a polishing agent for glass mirrors, in sunscreens, ophthalmic lenses and in the automobile industry to increase fuel efficiency. Some studies have found that cerium oxide nanoparticles may also be capable of acting as antioxidants, leading researchers to investigate the potential biomedical applications of these nanoparticles.

For more information, contact Blough at blough@marshall.edu or 304-696-2708.

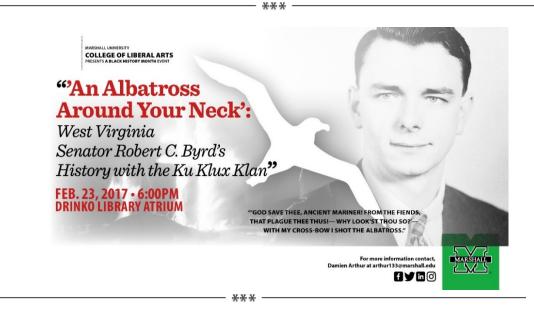


Bethel to discuss teaching abroad Feb. 23 on the South Charleston campus

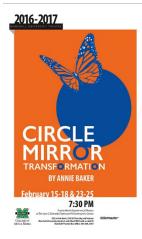
Dr. Charles Bethel, associate professor of leadership studies, will give a lunch-hour presentation on teaching in other countries at noon Thursday, Feb. 23, in room 319 of the administration building on on Marshall's South Charleston campus.

Click to view flyer for more information.





'Circle Mirror Transformation' begins second week tomorrow night



The School of Theatre will continue performances of *Circle Mirror Transformation* by Annie Baker Thursday, Feb. 23.

Remaining performances run at 7:30 p.m. nightly, Thursday, Feb. 23 through Feb. 25 in the Francis-Booth Experimental Theatre in the Joan C. Edwards Performing Arts Center.

The production is directed by School of Theatre Associate Professor Nicole Perrone.

When four lost New Englanders who enroll in Marty's six-week-long community-center drama class begin to experiment with harmless

games, hearts are quietly torn apart, and tiny wars of epic proportions are waged and won. A beautifully crafted diorama, a petri dish in which we see, with hilarious detail and clarity, the antic sadness of a motley quintet.

Tickets are \$20 for the general public, \$15 for Marshall University faculty and staff, and \$7 for children 12 and under. Marshall University students are admitted with a valid I.D.

To purchase tickets, contact Marshall's box office on the Huntington campus Monday through Friday from 1 to 4:30 p.m. or by calling 304-696-ARTS (2787).

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Marshall to host annual Diversity Breakfast Friday



As Marshall continues it efforts to embrace the importance of living in an inclusive society, the university will host its annual Diversity Breakfast Friday, Feb. 24, in the Memorial Student Center.

The theme for this year's breakfast is "Bring Peace and Love," according to Maurice Cooley, associate vice president of intercultural affairs and organizer of the event. Cooley said he anticipates an uplifting experience dedicated to the importance of bringing peace and love into each other's lives.

"At this particular time in our world, we do not have the level of peacefulness we should aspire to have," Cooley said. "The Diversity Breakfast will provide an opportunity for our guests to hear the words of peace and love from prominent peacemakers around the globe."

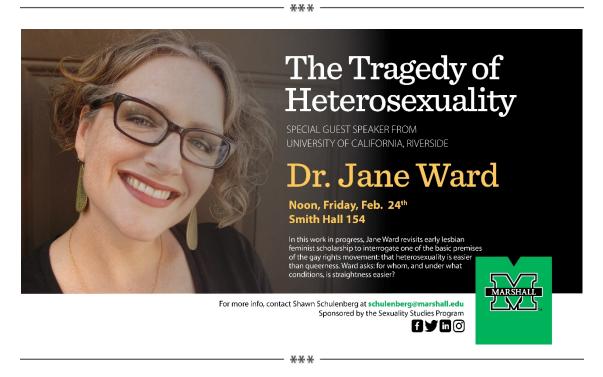
Marshall students from across the U.S. and from across the country will be reciting readings that represent global peace.

"We have students from Cuba, Thailand, Singapore and all across West Virginia and the U.S. who will share inspirational stories from world leaders like Rosa Parks, Helen Keller, Muhammad Ali and even a few local names you might recognize," Cooley said.

With music provided by the Marshall University Jazz Ensemble, this year's event is expected to draw over 370 guests, with over 40 different campus and community organizations in attendance, Cooley said.

"Many people throughout our campus community look forward to this event. It's such a friendly and enthusiastic experience to chat with one another, embrace new friendships and come together with the same purpose."

The breakfast will begin at 7:30 a.m. in the student center's Don Morris Room and is expected to end at 8:50 a.m. For more information about the annual Diversity Breakfast, contact Cooley at cooley@marshall.edu or by calling 304-696-5430. To learn about future activities sponsored by the Office of Intercultural Affairs, visit www.marshall.edu/intercultural online.



Eighth Annual Festival of New Music to bring new works, guest performers



The Marshall University School of Music once again will bring new musical works to the Tri-State during the Eighth Annual Festival of New Music March 2-3.

This year's festival will feature works of internationally recognized composers and a host of guest performers, including cellist Craig Hultgren (left) and oboist Dr. Richard Kravchak. It also will feature performances by Marshall students and faculty, including Assistant Professor of Piano Dr. Johan Botes. The festival will kick off at 7:30 p.m. Thursday, March 2, in Smith Music Recital Hall on the university's Huntington campus with a concert featuring works by Mike McFerron; Marshall graduate student Jarohn Grandstaff; Marshall senior Jonathan Shuff; James Harley and Frank Zappa. The Marshall University Percussion Ensemble also will perform.

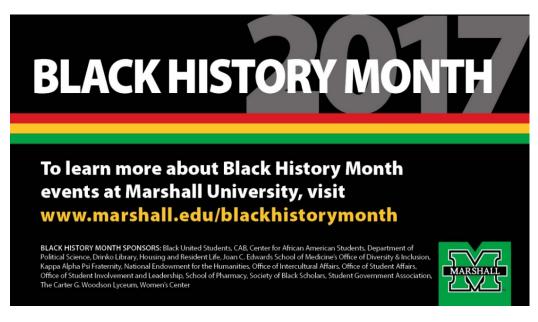
On Friday, March 3, the festival will move to Fifth Avenue Baptist Church, 1135 Fifth Ave. in Huntington, when the MUsic Alive Chamber Series will present a noon recital by special guest artist Hultgren, who will perform his own work as well as pieces composed by Marshall Professor of Music Mark Zanter; David Morneau; Gene Pritsker; Ann Warren and Charles Norman Mason.

Guest performer Kravchak, a widely recognized soloist and chamber and orchestral musician, will round out the festival with a concert at 7:30 p.m. Friday, March 3, in Smith Music Recital Hall. Accompanied by Botes, Kravchak will perform works by Luigi Zaninelli; Zanter; Luciano Berio, Daniel Kessner and Charles Ingram.

The Eighth Annual Festival of New Music is presented by the College of Arts and Media through the School of Music with the support of MUsic Alive. For more information about the festival, call 304-696-3117 or visit www.marshall.edu/cam.



Click above for more information.



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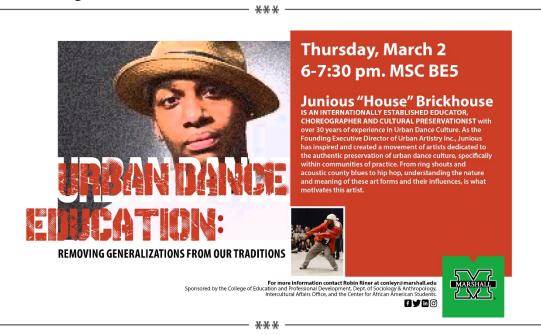
Faculty Achievement: Dr. Thomas Wilson

Zhi Liang, Professor of Mechanical Engineering, California State University – Fresno, Thomas Wilson, Professor of Physics, Marshall University, and Pawel Keblinski, Professor and Department Head, Materials Science and Engineering Department, Rensselaer Polytechnic Institute, have published "Phonon interference in crystalline and amorphous confined nanoscopic films" in the *Journal of Applied Physics*, Volume **121**, Issue 8, 075303, February 28, 2017. It can be viewed online at: http://dx.doi.org/10.1063/1.4976563.

Phonons are the primary thermal energy carriers in semiconductor devices. As the size of semiconductor components in microelectronics reduces to nanoscale, phonon scattering at material interfaces can strongly affect thermal transport in nanostructured components. It has been found in numerous experiments and numerical simulations that the specular reflection and transmission of phonon waves at interfaces of nanostructured components may result in phonon interference effects which can be used for the modification of phonon dispersion and for controlling nanoscale heat transport.

Abstract: Using molecular dynamics phonon wave packet simulations, we study phonon transmission across hexagonal (h)-BN and amorphous silica (a-SiO2) nanoscopic thin films sandwiched by two crystalline leads. Due to the phonon interference effect, the frequency-dependent phonon transmission coefficient in the case of the crystalline film (Si|h-BN|Al heterostructure) exhibits a strongly oscillatory behavior. In the case of the amorphous film (Si|a-

SiO2|Al and Si|a-SiO2|Si heterostructures), in spite of structural disorder, the phonon transmission coefficient also exhibits oscillatory behavior at low frequencies (up to \sim 1.2 THz), with a period of oscillation consistent with the prediction from the two-beam interference equation. Above 1.2 THz, however, the phonon interference effect is greatly weakened by the diffuse scattering of higher-frequency phonons within an a-SiO2 thin film and at the two interfaces confining the a-SiO2 thin film.



'Thunder on the Stage' set for March 6



The Fourth Annual Thunder on the Stage Talent Competition is less than a month away! Join us at 7 p.m. Monday, March 6, in the Joan C. Edwards Playhouse to see our most entertaining and gifted students compete to win campus notoriety and prizes! This event is free for university staff as well as the community.

Know a talented student who may want to compete? Have him or her visit www.marshall.edu/tots and apply to perform! Applications will be accepted until 8 p.m Monday, Feb. 27.



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The Marshall University Joan C. Edwards School of Medicine is pleased to announce the 2017 "Standing Out in Our Field" scholarship fundraiser scheduled for Saturday, June 3. This year's theme is "Welcome to Jamaica."

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The next regular issue of *We Are...Marshall* will be distributed March 1, 2017. Please send items for consideration to WAMnewsletter@marshall.edu by 5 p.m. Monday, Feb. 27.

To read the content of this newsletter online, please click on the following link: http://www.marshall.edu/wamnewsletter/February-22-2017