

# In Memoriam

We are saddened to report the loss of several major contributors to our community over the past several years. The following pages describe the lives and contributions of several of these cherished colleagues.

The ITCC/ITES Board of Governors

## In Memory of Paul G. Klemens

The thermal conductivity community lost a major contributor with the death of Dr. Paul G. Klemens on July 26, 2012. He provided significant input to each conference for over half a century. These were theoretical papers that explained the role of phonons in heat conduction in materials. We learned and were enthralled by his lucid and exact descriptions of the behavior of the phonon gas. Many of his presentations began with the equation to describe conduction by gas atoms as the product of specific heat, mean free path, and velocity. He extended this to the phonon–phonon gas and phonon–electron gas interactions and roles in heat flow in numerous materials. Words are unable to capture his stature and influence on this conference. He had a huge impact on all of us. His commitment to understanding and explaining thermal conductivity set a standard for the entire world. No one was more dedicated to advancing this than Dr. Paul G. Klemens.



In 1972, Paul was the recipient of the “Thermal Conductivity Award” in recognition of his accomplishments in the field of thermal conductivity and as a mark of the high esteem in which he was held by his fellow workers. With this award, he was made a Fellow of the International Thermal Conductivity Conference. Dr. Klemens and Gordon Godfrey (ORNL) cohosted the 1975 Thermal Conductivity Conference at the University of Connecticut, and since then, he served as a member of the ITCC Governing Board.

A summary from his obituary provides significant insight into this wonderful man:

Paul Gustav Klemens, an emeritus professor and former chairman of the University of Connecticut, Department of Physics, passed away at the age of 87. He was born in 1925 in Vienna, Austria, the son of Jewish parents who owned a textile business supplying yarn to petit point workshops. At age 12, shortly after the Nazi-orchestrated Kristallnacht, his father was arrested and temporarily held in a concentration camp. When his father was released, the family fled to Australia in 1939. As German-speaking immigrants, he and his parents were initially mistrusted by the Australians, but nonetheless reestablished business near Sydney. He learned to speak English and, demonstrating an aptitude for mathematics, won a scholarship to the University of Sydney, where he earned B.S. and M.S. degrees in Physics. In 1948, he was awarded a scholarship to Oxford University in England where at the Clarendon Laboratory he spent several years as a member of the elite cryogenics group of doctorate researchers, including Robert Berman and Guy White among others, assembled by Professor Simon to work on heat transport in solids. On his arrival in London following a long and exhausting ocean journey, he was invited to attend a Jewish holiday dinner at the home of a local family. There, he met Ruth Wiener, a Holocaust survivor. The couple was married in 1950, and after Paul completed his Ph.D., they returned to his adopted country of Australia, where he became principal research officer at the National Standards Laboratory. In 1959, they emigrated to the United States where he joined the Westinghouse Research Laboratories in Pittsburgh, PA, heading a group that worked on an early version of what was later known as “Star Wars” missile defense technology. In 1967, he was appointed chairman of the University of Connecticut, Physics Department. During his tenure, he supervised 13 Ph.D. and many other graduate students and worked as a consultant for both private industry (United Technologies) and the federal government, including the U.S. Naval Research Lab and the Los Alamos and Oak Ridge National Laboratories. He was the author of several books and numerous scientific papers, as well as the recipient of numerous professional awards. He was elected member of the Washington, DC-based Cosmos Club, whose members are recognized leaders in the fields of science, literature, arts, and politics. Also, he was a fellow of the American Physical Society and the Institute of Physics (U.K.).

Along with his late wife, Ruth, he was an active member of Temple Beth Shalom B'nai Israel in Manchester. When the couple moved to Mansfield in the 1980s, they were engaged in social and philanthropic events within the university community. He is predeceased by his wife, Ruth Hannah Wiener Klemens, who died of cancer in 2011, and is survived by his son Michael W. Klemens of Salisbury and daughter-in-law Nicole Klemens of Rye, NY, and their sons Daniel and Robert Klemens; his daughter Susan M. Klemens and son-in-law Daniel Root and their daughter Melinda Root of Alexandria, VA; a sister-in-law Mirjam Finkelstein of London and his brother-in-law Ted Plaut of Madison.

Those of us who were privileged to know Paul, knew a shy, friendly, and totally unintimidating person, whose stellar professional accomplishments never got in the way of being personable. He had little tolerance for mediocrity, and valued those around him who produced up to their potential. This showed in his many peer reviews of papers for this Conference, in the territory of theory where few ventured. His willingness to serve and to partake in the business of the Governing Board was exemplary. His contributions, opinions, and suggestions were always respectful, gentle, and constructive even when his views were diametrically opposed to the prevailing trends. He never left communications unanswered, even during some of the most trying times of his life.

His devotion to his wife was infinite, and he never regained his equilibrium after her passing. Nevertheless, till the last moment, he continued writing papers of substance and planned to present them at this Conference hosted by Purdue University. He was a gentle giant among us without fanfare. The scientific community and this Conference will sorely miss him and his gracious wife, Ruth.

### **In Memory of Ralph Lewis Rudkin, Jr.**

Obituary for Ralph Rudkin

Ralph L. Rudkin, age 84, of South Riding, Virginia, passed away on Sunday, June 15, 2014 peacefully at home surrounded by his loving family.

He was born in Stockton, California, on July 14, 1929 to Ralph L. Rudkin, Sr. and Amy Morse Rudkin. He was married to Kathryn Huckleby Rudkin for 63 years.

Ralph served in the U.S. Navy from 1950 to 1954. After his service in the Navy, he attended the University of California at Berkeley where he studied electrical engineering. His Navy civilian contractor work as an early researcher in the field of lasers led him to be honored and inducted as a Fellow in the International Thermal Conductivity Conference in 1999 in Pittsburgh, Pennsylvania.

Besides his beloved wife, Ralph was survived by his daughter, Lynn Rudkin McElhaney, former son-in-law Randall McElhaney; two granddaughters, Katie E. Thayer (Jonathan) and Laura C. McElhaney; two sisters, Marion Mann and Virginia Kingston; one brother, Wayland Rudkin; numerous nieces and nephews. He was particularly close to nieces Debbie VanderVeen, Karen Huckleby, Rene Descovich, and Kathy Swinehart.

Ralph was an active member of the Chancel Choir at Centerville United Methodist Church for almost 28 years where he sang with his daughter.

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### **In Memory of David Salmon**

David did his degree at Brunel University where he got an honours degree in Applied Physics. His course alternated periods of study with 6-month work placements, the last of which was at the National Physical Laboratory (NPL) in Teddington during the summer of 1965. Following his graduation, David was taken onto NPL's staff as a Scientific Officer.

In his early days at NPL, David worked within a large group investigating cryogenic super conducting materials with the aim of trying to characterize and improve their properties. When this work came to an end, the group began studying the thermophysical and mechanical properties of engineering alloys at cryogenic temperatures. During this period, David took on the task of reviewing scientific literature to extract and evaluate thermophysical and mechanical data for two alloy groups – one based on aluminium and the other on titanium.

In 1978, the group had another change in direction and was required to establish a national standard facility for the measurement of thermal performance of building materials. The dramatic energy price rises at that time caused most of the world to be plunged into a recession and the availability of accurate thermal property data for

the construction materials became essential as governments wrestled with the task of ensuring that our buildings achieved higher levels of energy efficient. David's first task was to design and build the measurement apparatus with the necessary accuracy to carry out measurements of thermal conductivity on thermal insulation materials, and then establish the facility as a UK national standard.

Once the facility for building materials was up and running, David then turned his attention to extending the upper temperature range of these measurements by developing a new apparatus for measurements on thermal insulation used in industrial applications up to 800°C. Following the success of this second facility, David continued developing this work through his leadership of a small group of younger scientists who extended the range of these measurements, both in terms of material type and down to the cryogenic temperatures that are found in liquid natural gas containers and transport systems.

David officially retired from NPL in 2003, but continued as a part-time consultant and oversaw the construction of a facility to measure the thermal performance of pipe insulation. He also continued to contribute to the development of international measurement standards through his role as the convenor of a CEN expert working group. David was recognized as a leading international expert on techniques for measuring the thermal conductivity, and in 2009, at the 30th International Thermal Conductivity Conference he was awarded the prestigious Thermal Conductivity Award for his lifelong work and outstanding contribution to this field.

Throughout his time at NPL, David was a keen sportsman and cyclist. He played football into his early 50s for an NPL veteran's team and competitive league table tennis up until the time that he became ill with cancer. He was an active member of his local church and community, including being a leader for many years within a local Christian youth organization. David was a very proud and committed family man and leaves behind Wendy his wife and a son, daughter, and grandson.

### In Memory of Kenneth E. Wilkes

The thermophysical properties testing community lost a major contributor with the death of Dr. Kenneth E. Wilkes on March 13, 2013.

Ken was an outstanding research engineer who used steady-state and transient tests to measure thermophysical properties of a wide variety of materials, including metals, ceramics, graphites, and thermal insulations, using specimens that ranged from the size of a dime to the size of an attic. His research benefitted both the International Thermal Conductivity Conferences (ITCC) and the Thermal Insulation Committee (C16) of the American Society for Testing and Materials (ASTM). His first ITCC contribution was at the Eighth Meeting in 1968 at Purdue University, which was hosted by C. Y. Ho and R. E. Taylor. This paper addressed his M.S. thesis on the thermal conductivity of cobalt and zinc between 78 and 373 K. His major Professor at Purdue was Dr. Raymond E. Taylor. Ken joked about being the only graduate student to break the foot of his major professor, which he did to Ray in a pick-up basketball game.



In 1995, R. B. Dinwiddie, R. S. Graves, and Ken Wilkes (all of Oak Ridge National Laboratory) hosted the 23rd ITCC in Nashville, Tennessee. In 1999, Ken was the recipient of the "Thermal Conductivity Award" in recognition of his accomplishments in the field of thermal conductivity and as a mark of the high esteem in which he was held by his fellow workers. With this award, he was made a "Fellow of the International Thermal Conductivity Conference."

Ken was an active participant in ASTM Committee C16 (Thermal Insulation) and served as chair of ASTM C16.33 (Finishes and Moisture) for 6 years. ASTM C16.33 has direct responsibility for ten ASTM standards. He served as task group chair for many ASTM standards and his publications are cited in more than ten ASTM standards. His papers in the ASTM C16 and the ASHRAE Symposiums, his open literature publications, and his ORNL reports provided peer-reviewed technical support for numerous C16 standards. In 2004, ASTM C16 gave him the "Award of Appreciation" and in 2006 the "Award of Merit" for development and publication of standards for the insulation industry.

His obituary, which was published in the Knoxville News Sentinel, provides valuable insight into his background and his amazing diversity:

**DR. KENNETH EARL WILKES (KENNY)** – age 68, of Knoxville, Tennessee, formerly of Columbus, Ohio, passed away Wednesday evening, March 13, 2013, at his home. He was born on June 6, 1944 (D-Day) in Huntington, West Virginia, the son of Earl M. Wilkes and the former Nevada Dickerson.

He was raised in Huntington and graduated from Vinson High School, where he was a valedictorian and president of his senior class, lieutenant governor of the state Key Club, and earned varsity letters in track and as manager of the football team. He attended Duke University on academic scholarships, where he earned a B.S. in Mechanical Engineering, graduated with distinction, was elected to Phi Beta Kappa and Tau Beta Pi national honorary societies, participated in student government, and earned varsity letters as manager of two intercollegiate sports teams. He earned an M.S. in Mechanical Engineering from Purdue University, and M.S. and Ph.D. in Condensed Matter Physics from the Ohio State University. He worked as a research engineer–physicist at the U.S. Naval Ordnance Laboratory in White Oak, Maryland, Battelle Memorial Institute in Columbus, Ohio, Owens-Corning Fiberglas in Granville, Ohio, and the Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tennessee. He retired in 2006 from ORNL as a Distinguished R&D Staff Member. He was an international expert in thermophysics and was a fellow of two international scientific organizations. After retirement, he was active in the Tennessee State Guard, attaining the rank of major, and served as adjutant for the Third Regiment, which serves East Tennessee. He was also docent for the Farragut Folk Life Museum. He was preceded in death by his father, Earl Wilkes. Kenny is survived by his loving wife of 46 years, Rose; son, Dr. David Wilkes and daughter-in-law Dr. Vidya Rajagopalan of Granger, Indiana; daughter, Suzanne Wilkes-Portante and son-in-law Gerald Portante of Littleton, Massachusetts; granddaughters, Elizabeth, Cecilia, and Isabella Portante of Littleton, Massachusetts, and Aashna Wilkes of Granger, Indiana; mother Nevada Kilgore of Huntington, West Virginia; brother, Ernest Wilkes and sister-in-law, Patricia of Jacksonville, Florida; and several nieces and nephews. He was a member of the Concord Methodist Church. He recently developed a passion for genealogy and through his research was accepted into the General Society of Mayflower Descendants and the National Society, Sons of the American Revolution. He was a wonderful and patient husband, father, and grandfather. He lived a life of grace and left the world a better place for being a part of it. With his kindness, humor, and ready smile, he touched so many people. We will miss him greatly but know that the joy he gave us will live forever in our hearts. A celebration of life was held at the Concord United Methodist Church and interment was in the Woodmere Cemetery in Huntington, West Virginia. Memorials may be made to the National Kidney Foundation.

We will sincerely miss Ken not only for his scientific and technical achievements but also because he was a fine gentleman and friend.