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Welcome to the TEP Division

Chemical engineers apply the principles of chemistry, biology and physics to solve problems. These problems involve the production or use of chemicals, fuels, drugs, food and many other products. Chemical engineers may design processes and equipment for safe and sustainable, operations on a large-scale, or, they may be performing similar tasks at the nano-scale level.

The Transport and Energy Processes (TEP) Division reports on promising technologies being considered nationwide for pilot and demonstration scale development; for example, fuel cell systems capable of using a variety of fuels,

and biofuel production facilities that use non-food, non-feed renewable feedstocks. In addition, opportunities for alternative fossil fuels continue to draw significant interest.

Focusing on the broad field of heat transfer, the AIChE Transport and Energy Processes Division coordinates meetings and conferences that provide opportunities for engineers and scientists to exchange ideas, experiences and evaluations.

Message from the Division Chair

Terry L. Payne
TEP Division Chair Oak Ridge
National Laboratory

The AIChE Transport and Energy Processes Division consists of a blend of professionals from industry, national laboratories and academia who share their passion for understanding the transport processes involved in energy and related applications.

I invite you to: 1. Join us as we network with other professionals in the field, and 2. Take advantage of valuable career development opportunities TEP Division membership provides.

Why TEP is Right for You#



“Our TEP members engage in outreach activities to communicate the excitement of energy and transport processes to young engineers and prospective students”

The TEP Division provides a platform for members and non-members in the following areas:

- Establish and expand your professional and social network.
- Obtain advanced information through topical and technical sessions.
- Obtain information on emerging technologies through tutorials and refresher courses on fuel cells, energy storage, and nanotechnology, and other topics relevant to your professional development.
- Develop valuable contacts leading to collaborations and funding.
- Develop contacts with academia, government agencies and National Laboratories.

How to Join TEP#

call AIChE Customer Service: 1-800-242-4363 (USA) or +1-203-702-7660 (International)

Annual TEP membership is just \$7.

To join:

Go to: <http://www.aiche.org/community/divisions-forums/tep>



Join Us

TEP Division Executive Committee Meeting

AIChE annual meeting

San Francisco, CA

Monday Nov. 4th from 6:00 - 7:30 pm Hilton Hotel / Union Square 17

JOIN US FOR AN EXCITING TEP DIVISION SESSION PROGRAM

AT THE 2013 ANNUAL AIChE MEETING

November 3-8, 2013

Hilton San Francisco Union Square, San Francisco, CA

Monday, November 4, 2013: 08:30 AM - 11:00 AM, Hilton SF, Union Square 17

[07001 Advances in Fuel Cell and Battery Technologies I](#)

Monday, November 4, 2013: 12:30 PM - 03:00 PM, Hilton SF, Union Square 17

[07004 Advances In Fuel Cell and Battery Technologies II](#)

Monday, November 4, 2013: 03:15 PM - 05:45 PM, Hilton SF, Union Square 17

[07005 Advances in Fuel Cell and Battery Technologies III](#)

Tuesday, November 5, 2013: 08:30 AM - 11:00 AM, Hilton SF, Union Square 17

[07006 Advances In Fuel Cell and Battery Technologies IV](#)

Tuesday, November 5, 2013: 12:30 PM - 03:00 PM, Hilton SF, Union Square 17

[07002 Advancements in Hydrogen Production and Storage I](#)

Tuesday, November 5, 2013: 03:15 PM - 05:45 PM, Hilton SF, Union Square 17

[07000 Advancements in Hydrogen Production and Storage II](#)

Wednesday, November 6, 2013: 08:30 AM - 11:00 AM, Hilton SF, Union Square 17

[07003 Drop-in Biofuels: Challenges to Developing Hydrocarbon-Like Biofuels](#)

Join us at the 2014 Spring AIChE Meeting
March 30 – April 3, 2014
Hilton New Orleans - Riverside

[Advanced Heat Transfer Processes](#)

[Advances in Fuel Cell and Battery Technologies](#)

[Enabling Process Innovation Through Computation-EPIC - Session I: Focus On Chemical Process Operations](#)

[Enabling Process Innovation Through Computation-EPIC - Session II: Focus On Petroleum Recovery Process Operations](#)

[Experimental, Theoretical and Numerical Analysis of Transport Processes in Flow Reactors](#)

[Fischer-Tropsch Catalysts and Reactions](#)

[Holistic Troubleshooting](#)

[Natural Gas From Shale - Its Problems and Promises](#)

[Process Safety in the Renewable Energy Sector: Challenges to Creating Safe Processes in Emerging Industries](#)

[Scale-Up Of Mixing Processes: Complimentary Workflows](#)

[Sustainable and Renewable Biofuels](#)

[Thermal Energy Storage Systems and Their Applications](#)

[Smart Grid for the Process Industries: Tutorial Overview and Panel Discussion](#)

TEP Division Awards

The TEP Division provides recognition and awards to chemical engineers who have demonstrated excellence and achievement in their specialty through several awards.

The ***Donald Q. Kern Award*** is presented to an individual in recognition of their expertise in heat transfer or energy conversion.

The ***TEP Division Award*** is presented to an individual who has made an outstanding contribution to chemical engineering in the areas of heat transfer or energy conversion.

The ***TEP Best Paper Award*** is presented every year to the top presenter at the TEP topical sessions during the Spring AIChE Conference. The paper can be in any area of Chemical Engineering presented at any of the TEP Topical Sessions during the Spring Conference. Each session Chair will recommend one paper presented in his/her session based on pre-determined criteria.

Winners are presented with awards at a division/forum event held at one of AIChE's national conferences. Award recipients may also be recognized in AIChE member publications, meeting program books, and web-site listings. General rules, eligibility and how to apply for each of these awards are described in the sections below.



*The 2013
Transport and Energy Processes Division's*

Donald Q. Kern Award

Presented to

Masahiro Kawaji#

For his extensive record of major contributions to heat transfer research on heat exchangers, multiphase heat transfer, thermal energy storage, microgravity thermal science and nuclear reactor thermal hydraulics.



Transport and Energy Processes Division's

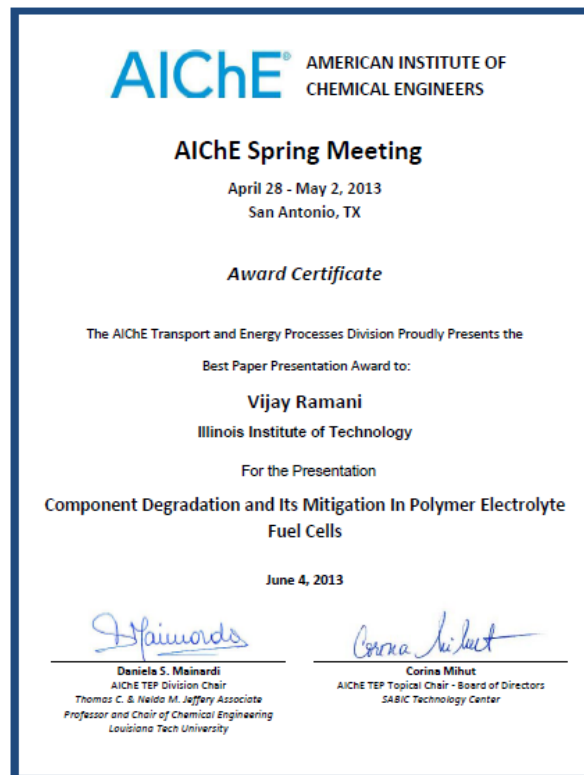
2013 Best Paper Award

Presented to

Vijay Ramani
Illinois Institute of Technology

For his presentation on

*"Component Degradation and Its Mitigation In
Polymer Electrolyte Fuel Cells"*



2013 Distinguished Alumnus Award

Indian Institute of Technology (IIT) - BHU, India
was bestowed upon

Virendra K. Mathur

for his extensive record of major contributions to education,
research and community service.

The award was presented at the IIT-BHU Global Alumni Meet on
September 21, 2013 at Somerset, New Jersey, USA.

Prof. Mathur is **Professor Emeritus**, Department of Chemical
Engineering, University of New Hampshire, Durham, NH. He
received his B.S. degree from IIT-BHU and M.S. and Ph.D. from the
Missouri University of Science and Technology, Rolla, MO. He also
served as **Professor and Head, Department of Chemical
Engineering, IIT-BHU.**

He is the recipient of several prestigious awards including **2013**

AIChE George L. Lappin award.

He is also an **AIChE Fellow.**



Dr. V.K. Mathur (right) receiving the award

D. Q. Kern Award

2013 Award Lecture

“Heat Transfer Aspects of Thermal Energy Storage and Utilization”

Prof. Masahiro Kawaji is Professor of Mechanical Engineering and Associate Director of the CUNY Energy Institute at City College of New York. He is also Professor of Chemical Engineering at the University of Toronto, where he has taught since 1986. He received B.A.Sc. degree from the University of Toronto in 1978, and M.S. and Ph.D. degrees from the University of California, Berkeley in 1984. Over the past 30 years, Masahiro has worked on multiphase flow and heat transfer problems and published nearly 400 archival papers in chemical, mechanical and nuclear engineering fields. He is a Fellow of the Canadian Academy of Engineering, American Society of Mechanical Engineers and Chemical Institute of Canada. His research interests include multiphase flow and phase change heat transfer, thermal energy storage, microgravity fluid and thermal sciences, nuclear reactor thermal-hydraulics, thermal diffusion, heat pipes and microfluidics. In recognition of his contributions to heat transfer research, he was awarded the Jules Stachiewicz Medal by the Canadian Society for Chemical Engineering in 2002, and an Engineering Medal for R&D by the Ontario Professional Engineers in 2006.

Different types of thermal energy storage systems have been developed in recent years for both heating and cooling applications, as well as for power and steam generation. Sensible, latent or chemical reaction heat can be reversibly stored and released from TES systems with a wide range of energy storage densities. Large scale, high temperature TES systems are being developed for solar thermal applications, while low temperature systems using phase change materials have been used for air conditioning of buildings to offset peak energy demands. Heat transfer issues arise from the generally low thermal conductivity of thermal storage media, such that an optimum heat exchange configuration must be selected and some means of heat transfer enhancement is often necessary to achieve sufficiently high rates of heat storage and recovery. Different TES systems being developed for several applications will be discussed along with the technical issues involved in each system.



Dr. Masahiro Kawaji (right) with Dr. V.K. Mathur (left) and Dr. Ken Bell (center)

TEP Division Award – Sponsored by Fauske & Associates

This award is presented biennially and only members of AIChE are eligible. The selection criteria for the TEP Award include:

1. Distinguished service of a chemical engineering nature, in heat transfer or energy conversion as a professional engineer, educator, or AIChE leader.
2. Outstanding contributions of a chemical engineering nature, in the field of design, construction, operation, or management of heat transfer or energy conversion facilities or enterprises.
3. Research or development of new processes or equipment relating to chemical engineering applications in heat transfer or energy conversion.
4. The recipient must be a member of AIChE.

Nomination packages for the TEP Division Award must include a brief professional history of the nominee and specify how he/she meets the criteria of the award. Unless otherwise noted, three to five supporting letters, citing specific contributions and reasons for their value, are also required.

Donald Q. Kern Award – Sponsored by Tubular Exchanger Manufacturers Association (TEMA)

The Donald Q. Kern Award recognizes an individual's expertise in a given field of heat transfer or energy conversion. The winner is selected based upon the significance of their contributions to applied heat transfer or conversion, or, in the translation of research results into useful technological applications.

Nomination packages for the Donald Q. Kern Award must include a brief professional history of the nominee and specify how he/she meets the criteria of the award. Unless otherwise noted, three to five supporting letters, citing specific contributions and reasons for their value, are also required.

Nomination packages are received and awardees are selected by a subcommittee of the TEP Division. The Donald Q. Kern Award recipient is required to prepare a written review of a topic selected by the recipient, with the review typically being published

The TEP Division Award recipient will be invited to speak at a TEP Division dinner, held at an AIChE Annual Meeting. In addition to recognition, the winner of this award will receive a plaque and \$500.

Some past winners are: J. C. Chen, V. K. Mathur, S. W. Churchill, S. G. Bankoff, and J. W. Westwater.

To nominate someone for one of the TEP Division Awards, send five copies of the nomination package by April 1 to Daniela S. Mainardi, Associate Professor, Louisiana Tech University, 911 Hergot Street, Ruston, LA 71272 - phone (318-257-5126).

The general nomination form can be found on the TEP AIChE website. For more information about the TEP Division Award, contact [Kelly Ibsen at kibsen@lynxeng.com](mailto:kibsen@lynxeng.com).



in an AIChE publication. In addition, the recipient receives a plaque and \$1,500. Some of the past winners are M. El-Genk, K. Bell, P. C. Wayner, Jr., S. W. Churchill, and Masahiro Kawaji, the 2013 recipient of this prestigious award.

To nominate someone for one of the TEP Division Awards, send five copies of the nomination package by April 1 to Daniela S. Mainardi, Associate Professor, Louisiana Tech University, 911 Hergot Street, Ruston, LA 71272 - phone (318-257-5126).

The general nomination form can be found on the TEP AIChE website.

The 2013 D. Q. Kern Award will be supported by TEMA, the Tubular Exchanger Manufacturers Association. Please consult the AIChE website before sending applications, as other conditions for the award may apply.

For more information about the Donald Q. Kern Award, contact [Terry L. Payne at TERRY.L.PAYNE@ORNL.GOV](mailto:Terry.L.Payne@ORNL.GOV).

The Donald Q. Kern Award

The Donald Q. Kern Award is bestowed annually in recognition of the expertise in a given field of heat transfer, transport phenomena, and energy processes. Special emphasis is given to contributions that have significant practical applications.

Established in 1973 by the Executive Committee of the Heat Transfer and Energy Conversion, now known as the Transport and Energy Processes Division of AIChE, the award honors Donald Q. Kern, a pioneer in the field of process heat transfer, and commemorates his outstanding contributions as a researcher, educator, author, and practicing engineer.

Currently, the award is financially supported by the Tubular Exchanger Manufacturers Association, Inc. (TEMA), Tarrytown, NY. It is a trade association of leading manufacturers of shell and tube heat exchangers who have pioneered the research and development of heat exchangers for over sixty years. The TEMA Standards and software have achieved worldwide acceptance as the authority on shell and tube heat exchanger mechanical design.

Meet the TEP Division Officers

Terry Payne, Chairman of the TEP Division, is currently a Research and Development Program Manager at Oak Ridge National Laboratory. Payne has worked his entire career for DOE contractors in various technical and managerial positions. He currently is supporting development and profitable commercial deployment of the centrifuge process of uranium enrichment by contributing expertise in system integration, reliability engineering, availability assessments, risk management, intellectual property management, and maintainability/life-cycle engineering concepts. Payne has been an active member of the AIChE since 2007. He has been the Chair and Co-Chair for several AIChE Spring and National meeting sessions and has authored several papers for presentation and publication.



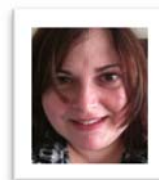
Terry L. Payne, 2013 Chair
Oak Ridge National Laboratory
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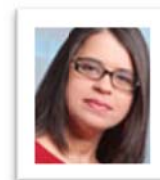
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