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C-Vita posted at: www.kostic.niu.edu/CVita/Kostic_C-Vita.pdf

Milivoje M. Kostic, Ph.D., P.Eng., *Professor Emeritus* of Mechanical Engineering at *Northern Illinois University*, Licensed [Professional Engineer](#) in State of Illinois (USA) and [Editor-in-Chief of Thermodynamics](#) of *Entropy Journal*, is a notable researcher and scholar in energy fundamentals and applications, including nanotechnology, with emphasis on conservation, environment and sustainability. He graduated with the University of Belgrade highest distinction (the highest GPA in ME program history), obtained Ph.D. at University of Illinois at Chicago as a Fulbright scholar, appointed as NASA faculty fellow, and Fermi and Argonne National Laboratories faculty researcher. Professor Kostic also worked in industry and has authored a number of patents and professional publications, including invited articles in prestigious energy encyclopedias. He has a number of professional awards and recognitions, is a frequent keynote plenary speaker at international conferences and at different educational and public institutions, as well as member of several professional societies and scientific advisory boards.

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[Prof. Kostic's Early Retirement and Start of a New Post-Retirement Career](#)

Kostic has retired from regular duties in 2014, with plan to refocus and enhance his professional activities, i.e., to start a new post-retirement career with emphases on national and international collaboration, including consulting and research, as well as 'motivational' speeches and lecturing.

Dr. Kostic's consulting and research interests are in the area of applied Fluid/Thermal/Energy sciences; with emphases on new technologies, experimental methods, creative design, and computer applications. Kostic has unique practical/theoretical synergy invaluable for troubleshooting and problem identification and solving (also he is a registered [Professional Engineer](#) - PE in Illinois and U.S. patent holder), including practical research experiences at NASA Glenn Research Center, Fermi National Laboratory, and Argonne National Laboratory ([Nanofluids](#)).
More at: www.kostic.niu.edu * www.kostic.niu.edu/Consulting.html * [SPEAKING Enquiry](#)

Current Scholarly and Research Interest: *Presentations and Manuscripts in Preparation:*

- Kostic, M., “*Reflections on Sadi Carnot's 'Reflections on Motive Power of Fire' and Generalization of the Second law of Thermodynamics*”
See more at: <http://www.kostic.niu.edu/Sadi-Carnot-Reflections.html>
- Kostic, M., “*Reflections on Caloric Theory, Thermal Energy and Reversible Heat Transfer Concept,*”
See more at: <http://www.kostic.niu.edu/Clausius-Mechanical-Theory-of-Heat.html>
- Kostic, M., “*Reflections on Thermodynamic Reversible Equivalency, Irreversible Energy Degradation and Exergy Loss including Gouy-Stodola Theorem*”
See more at: <http://www.kostic.niu.edu/2ndLaw/index.htm>
- Kostic, M., “*Reflections on Entropy and the Second law of Thermodynamics: Meanings and Misconceptions*”
See more at: <http://www.kostic.niu.edu/Entropy+Physical+Meaning.htm>
- Kostic, M., “*Electromagnetic Nature of Thermal and Mechanical Mass-Energy Transfer Due to Photon Diffusive Re-Emission and Propagation,*”
See more at: http://www.kostic.niu.edu/Nature_of_Thermal_and_Mechanical_Energy_Transfer.htm
- Kostic, M., “*Critical Issues in Nanofluids Research and Application Potentials,*”
See more at: <http://www.kostic.niu.edu/DRnanofluids/>

Personal Background:

Birth and Citizenship: Born on 20 March 1952 and raised in Serbia, ex-Yugoslavia; Serbia now. Immigrated to USA in 1988 and became naturalized U.S. Citizen in 1994.

Family: Married, with wife Dragica have two sons, Milosh and Marko.

Home Address: 1320 Mary Wood Court, Sycamore, IL 60178, USA

Educational Background:

1981-1984 **Ph. D. in Mechanical Engineering:** University of Illinois at Chicago with GPA 4.92/5.0. Thesis: "*Heat Transfer and Hydrodynamics of Water and Viscoelastic Fluid Flow in a Rectangular Duct.*" Advisor: Prof. James P. Hartnett.

1975-1978 **M.S. in Mechanical Engineering:** University of Belgrade, Yugoslavia with GPA 9.73/10.0. Thesis: "*Development of a Method for Laboratory Investigation of the Pulverized Coal Combustion in Conditions Similar to the Real Furnaces.*"

1970-1975 **Dipl. Mech. Engineer** (extended **B.S.** program in M.E.): University of Belgrade, Yugoslavia with GPA 9.78/10.0, with the University of Belgrade highest distinction (the highest GPA in ME program history).

Professional Experience:

2015 - *Professor Emeritus*, Mechanical Engineering Department, Northern Illinois University

2014 - *Prof. Kostic's Early Retirement and Start of a New Post-Retirement Career:*
www.kostic.niu.edu/Kostic-Early_Retirement.htm

2008-14 *Professor*, Mechanical Engineering Department, Northern Illinois University, DeKalb, IL. Taught undergraduate and graduate courses in thermodynamics, fluid mechanics, heat transfer, and experimental methods and design. Research interest in thermal/fluid/energy sciences including heat transfer and viscoelastic fluid flow, as well as development of new measurement techniques and fluid properties investigation, including LabVIEW with computerized data acquisition, CFD simulation, and nanotechnology with development of new-hybrid, POLY-nanofluids with enhanced properties.

1988-2008 *Assistant Professor & Associate Professor*, Mechanical Engineering Department, Northern Illinois University, DeKalb, IL. See under *Professor* above; duties were similar.

1986-88 *Research Associate*, Energy Resources Center, University of Illinois at Chicago. Coordinated research of doctoral students of Professor J.P. Hartnett, and had a major role in several research projects in non-Newtonian fluid flow and heat transfer.

1985-86 *Chief Researcher*, Energy and Thermal Engineering, Center for Research and Development, Copper and Aluminum Rolling Mills Corporation at Sevojno, Yugoslavia. Designed and analyzed industrial apparatus and processes with the objective of improving energy conservation and efficiency. Developed energy policy.

1982-84 *Teaching Assistant* in Fluid Mechanics, Mechanical Engineering Department, and *Research Assistant* in Heat Transfer, Energy Resources Center, both at the University of Illinois at Chicago. Design and utilization of flow loop apparatus, heat transfer test section, and an apparatus for heat conduction measurements.

1978-81 *Assistant (tenure-track faculty member)*, Faculty of Mechanical Engineering, University of Belgrade, Yugoslavia. Taught Thermodynamics and Heat Transfer. Design of research apparatus and equipment.

1976-78 *Researcher*, The Vinca Institute for Nuclear Sciences at Vinca-Belgrade, Yugoslavia. Worked in the area of macrokinetics of pulverized coal combustion, heat exchanger and thermal properties investigations. Designed an apparatus for investigation of pulverized coal combustion in conditions similar to real furnaces in thermal power plants.

Other professional achievements:

- *Editor-in-Chief of Thermodynamics of Entropy Journal*, 2015
- *Special Issue Editor: "Exploring the Second Law of Thermodynamics," Entropy (ISSN 1099-4300; CODEN: ENTRFG)*, an international and interdisciplinary open access journal of entropy and information studies, Appointed in September 2015.
- Editorial Board member of *Transactions of AcademEnergо* (Труды АкадемЭнерго), www.AcademEnergо.ru, 2013.
- Editorial Board member of *Entropy journal*: <http://www.mdpi.com/journal/entropy/editors>, 2013.
- *Special Issue Editor: "Entropy and the Second Law of Thermodynamics," Entropy (ISSN 1099-4300; CODEN: ENTRFG)*, an international and interdisciplinary open access journal of entropy and information studies, Appointed in November 2012.
- Invited Keynote/Plenary speaker/lecturer at international conferences and meetings, and at different educational and public institutions: <http://www.kostic.niu.edu/Speaking.htm>, and below. Member of the *Round Table Group Expert Consortium*.
- *Licensed Professional Engineer* (P.E. aka P. Eng.) in Illinois, License No. 062-046895; 1991-present.
- Appointed to serve on the *National Science Foundation (NSF)'s Nanoscale Interdisciplinary Research Team (NIRT) Review Panel* in Washington, DC. March 2007.
- Appointed to the *International Scientific Advisory Board* for the UNESCO sponsored 4th to 9th Conference on Sustainable Development of Energy, Water and Environment Systems. <http://www.dubrovnik2007.fsb.hr/sab.php> ; <http://www.dubrovnik2009.fsb.hr/sab.php> ; <http://www.dubrovnik2011.sdewes.org/sab.php>; <http://www.dubrovnik2013.sdewes.org/sab.php>; <http://www.mediterranean2014.sdewes.org/sab.php>
- Member of *Scientific and Research Board of Advisors*, Kaney Aerospace, Inc., Rockford, IL, since January 2007.
- Member of *AgTech Technical Advisory Board*, Growth Dimensions, Belvedere-Rockford, IL, since 2005.
- *Science Member of the NIU's Institute for NanoScience, Engineering & Technology (InSET)*, 2004-present.
- *Faculty Research Participation Program*, and *Guest Faculty Research Participant*, Argonne National Laboratory, 2004 & 2005.
- *Fermilab Guest Scientist*, Fall 2003 Sabbatical Semester, Fermi National Accelerator Laboratory, Batavia, IL.
- *NASA Faculty Fellowship* at Glenn Research Center in Cleveland, OH, Summer 2003.
- *ME Department Nomination for CEET Faculty of the Year-1997*, NIU-MEE Department, April 1998.
- Inclusion in "*Best Professor Series*" Directory for 1998/99 (college speakers for high schools or via interactive TV network), WSPSC-West Suburban Post-Secondary Consortium, Oak Brook, IL, 1998
- Cited (among the world's most outstanding individuals) in the books: "*Who's Who in the World*, Different editions, Marquis Who's Who, Chicago, 1980-Present.
- Cited in the books: "*Who's Who in Science and Engineering*," Different editions, Marquis Who's Who, Chicago, 1996-2009.

- Citation in: "MathCAD Files Around the World," MathSoft, Inc. Web Site [<http://www.mathsoft.com/mathcad/library/world.html>]
- Citation in: "A Directory of Coursework and Research Using Computer-Based Instrumentation," National Instruments, Inc. Web Site [<http://www.natinst.com/academic.nsf/>].
- Fulbright fellowship for Ph.D. graduate studies in the USA in 1981/82 academic year.
- Belgrade Chamber of Commerce Prize for M.S. Thesis, (a Yugoslavian award for the best thesis works) 1978.
- Belgrade October Prize for the best scientific and professional student work, 1975.
- University of Belgrade Prize as the best graduated student in 1975.
- Alas Diploma Award in Mathematics, (a Yugoslavian/Serbian national award for extraordinary achievements in high school mathematics) 1970.

Keynote/Plenary Speaker/Lecturer and similar

Invited Presentations/Lectures:

- **Invited Lecture:** Challenges to the Second Law Changers: *Reflections on the Universal Validity of the Second Law of Thermodynamics*, [Presentation](#) at [Second Law Symposium](#), San Diego, 2016. www.kostic.niu.edu/2ndLaw/2ndLaw2016-San_Diego-MK_Presentation-FNL.pdf
- **China 2015 Invited Lectures/Seminars** (www.kostic.niu.edu/Speaking.htm#China-2015):
 - [Energy, Entropy, and Innovations: Energy Conservation and Reducing Pollution](#), QUST-Qingdao University of Science and Technology, Qingdao, China, 12 December 2015. *[Photo](#)*[P2](#)*[P3](#)*[P4](#)*[Video](#)*NIU-China
 - [Thermoscience Research and Innovative Applications: Energy Conservation and Reducing Pollution](#), Institute of Thermophysics, School of Aerospace Engineering, Tsinghua University, Beijing, China, 10 December 2015. *[Photo](#)*[P2](#)*[P3](#)*[P4](#)*
 - [Nature of Energy, Heat and Entropy, and Thermal Innovations](#), Refrigeration and Built Environment, School of Energy and Environment, Southeast University, Nanjing, China, 7 December 2015. **[Photo](#)*[P2](#)*[Video](#)*
 - [From Thermoscience Research to Innovative Applications](#), Building Energy Research Center, School of Architecture, Tsinghua University, Beijing, China, 2 December 2015. *[Photo](#)*[P2](#)*[P3](#)*[BEC](#)*
 - [From Thermodynamics and Heat Transfer Fundamentals to Thermal Innovations and Energy Conservation](#), Energy and Resource Engineering, Peking University, Beijing, China, 27 November 2015. *[Photo](#)*[P2](#)*[P3](#)*
 - [Reflections on the Caloric Theory and Thermal Energy as a Distinguished Part of Internal Energy: Brainstorming Illusive Thermal Phenomena \(PDF\)](#), Institute of Thermophysics, School of Aerospace Engineering, Tsinghua University, Beijing, China, 18 November 2015. *[Photo](#)*[P2](#)*[P3](#)*[P4](#)* ([Free Thermo Functions-Functionals](#)) * [美国北伊利诺伊大学Kostic教授访问课题组-新闻动态-新概念热 \(Also 2013\)](#)
- **Plenary Lecture:** "Energy and Environmental Landscape: The Laws of Thermodynamics and Nature," [The 8th WSEAS International Conference on ENERGY & ENVIRONMENT \(EE'13\)](#), Rhodes Island, Greece, July 16-19, 2013. In "[Recent Advances in Energy and Environmental Management](#)"-PDF. ISSN: 2227-4359, ISBN: 978-960-474-312-4, WSEAS Press, 2013.
- **Invited Lectures:** [Some Challenges in Thermoscience Research and Application Potentials](#), Tsinghua University, Beijing, China, [17 June 2013](#). Xi'an Jiaotong University (XJTU), Xi'an, China, [24 June 2013](#); Huazhong University of Science and Technology (HUST), Wuhan, China, [26 June 2013](#).
- **Invited Seminar-II:** [Reflections on Thermal Energy, Reversible and Caloric Processes, Exergy and Entransy](#), Tsinghua University, Beijing, China, [18 June 2013](#).

- Invited Seminar-III:** [Reflections on Thermo-Mechanical Energy Transfer, Photons, Phonons and Thermions-Thermomass](#), Tsinghua University, Beijing, China, [19 June 2013](#).
- Invited Seminar-IV:** [Reflections on Real \(Thermodynamic\) Entropy, Disorder and Statistical Information Entropy](#), Tsinghua University, Beijing, China, [20 June 2013](#).
- **Special Issue Editor:** "Entropy and the Second Law of Thermodynamics," [Entropy \(ISSN 1099-4300; CODEN: ENTRFG\)](#), an international and interdisciplinary open access journal of entropy and information studies, Manuscript submission deadline: 20 December 2013. <<http://goo.gl/YRVcQ>>
 - **Invited Lecture:** "[Nanofluids Research: Critical Issues and Application Potentials](#)," [Norwegian University of Science and Technology -NTNU](#) (hosted by [NTNU Nanomechanical Lab](#)), Trondheim, Norway, 16 May 2012.
 - **Invited Seminar:** "[Critical Issues in Nanofluids: Research and Application Potentials](#)," [Royal Institute of Technology - KTH](#)(hosted by [Nanocharacterization Center-Functional Materials](#)), Stockholm, Sweden, 21 May 2012.
 - **Invited Seminar:** "[Dissecting The Second Law of Thermodynamics: It Could Be Challenged But Not Violated](#)," [Royal Institute of Technology - KTH](#) (hosted by [Department of Energy Technology](#)), Stockholm, Sweden, 22 May 2012.
 - **Keynote Lecture:** [Energy and Environment: Fundamentals, Challenges and Potentials](#), [The 7th IASME/WSEAS International Conference on ENERGY and ENVIRONMENT \(EE'12\)](#), [Kos Island, Greece](#), July 14-17, 2012.(*) [Recent Advances in Environmental & Geological Sciences](#).
 - **Keynote Lecture:** [Electromagnetic Nature of Thermo-Mechanical Mass-Energy Transfer Due to Photon Diffusive Re-Emission and Propagation](#), [International Forum on Frontier Theories of Thermal Science](#), [Tsinghua University](#), Beijing, China, December 18-20, 2011.
 - **Invited Lecture:** "[Holistic Reasoning and Generalization of the Second Law of Energy Degradation and Entropy Generation](#)," Department of Engineering Mechanics, School of Aerospace Engineering, Tsinghua University, Beijing, China, December 16, 2011.
 - **Keynote Lecture:** [Fundamental Laws of Nature: Mass-Energy, Work, Heat and Entropy - From Reversible Isentropic to Irreversible Caloric Processes](#), [The 8th WSEAS International Conference on ENGINEERING EDUCATION \(EDUCATION '11\)](#), Corfu Island, Greece July 14-16, 2011.
 - **Invited Lecture:** [Revisiting The Second Law of Energy Degradation and Entropy Generation: From Sadi Carnot's Ingenious Reasoning to Holistic Generalization](#), Symposium on: "[THE SECOND LAW OF THERMODYNAMICS: STATUS AND CHALLENGES](#)": [The 92nd Annual Meeting of the Pacific Division of the American Association for the Advancement of Science \(AAAS\)](#), University of San Diego, San Diego, CA, June 12-16, 2011.
 - [\(1\) The Second Law of Energy Degradation: Efficient and Sustainable Energy Use, and \(2\) Advanced Heat Transfer Nanofluids: Challenges and Opportunities](#), Faculty of Mechanical Engineering, University of Belgrade, Serbia, 17 June 2010.
 - [Energy Fundamentals and Sustainability](#), NIU-LLI Notable Lecture, April 28, 2010 in Holmes Student Center; [NIU's Lifelong Learning Institute \(NIU-LLI\)](#).
 - [The Second Law of Energy Degradation, Including Biological and Intelligent Processes](#), Seminar/Lecture, Bioengineering Department, September 4, 2009, University of Illinois at Chicago.
 - **Plenary Lecture:** Kostic, M., [SEE - Society Energy and Environment: The "Zeroth Religion" for Everybody!](#) The 3rd International Conference on ENERGY PLANNING, ENERGY SAVING, ENVIRONMENTAL EDUCATION (EPESE'09) [[PDF](#)]*www.ZerothReligion.com*[[in DoMinore](#)], La Laguna, Tenerife, Canary Islands, Spain, July 1-3, 2009.
 - [Energy Is Everything: Fundamentals and Future Challenges](#), [New Ideas in Science - Alternative Energy Conference](#), Northern Illinois University, March 16, 2009.

- [Energy Fundamentals and Future Outlook](#), Presented at [Shanghai Jiao Tong University \(SJTU-短片\)](#) in [Shanghai](#), China on 6 January 2009.
- [Energy Fundamentals and Applications](#), Presented at [Zhejiang University \(ZJU-短片-OR\)](#) in [Hangzhou](#), China on 8 January 2009.
- [Plenary Lecture: Kostic, M., Heat Transfer, Thermal Energy and Entropy - Demystified](#), [HMT'09-The 6th WSEAS International Conference on HEAT and MASS TRANSFER](#), Ningbo, China, January 10-12, 2009.
- [Plenary Lecture: Kostic, M., The CFD Simulation of Flooding Flows and Scouring Around Bridge Structures for Improved Design and Stability](#), [FLUIDS'09-The 6th WSEAS International Conference on FLUID MECHANICS](#), Ningbo, China, January 10-12, 2009.
- [Energy and Nanofluids](#), [Faculty of Mechanical Engineering, University of Belgrade](#), Serbia, 18 June 2008.
- [Energy and Future \(and\)](#), Business-Technical College of Professional Studies ([ВИСОКА ПОСЛОВНО-ТЕХНИЧКА ШКОЛА СТРУКОВНИХ СТУДИЈА](#)), Uzice, Serbia, 2 July 2008.
- [Plenary Lecture: World Energy and Future](#), [EEESD'08-The 4th IASME/WSEAS International Conference on ENERGY, ENVIRONMENT, ECOSYSTEMS and SUSTAINABLE DEVELOPMENT](#), Algarve, Portugal, June 11-13, 2008.
- [Plenary Lecture: Uniqueness and Universality of Heat Transfer](#), [HMT'08-The 5th WSEAS International Conference on HEAT and MASS TRANSFER](#), Acapulco, Mexico, January 24-27, 2008.
- [Energy Everywhere Explained](#), NIU SET-House Earth Day Presentation: M. Kostic, NIU Douglas Hall, April 19, 2007.
- [Nanofluids Research-Critical Issues and Application Potential](#), [University of Hawaii at Manoa](#), ME Seminar, September 18, 2006.
- [Energy Future Outlook: Importance of Renewable Biomass Energy and Bio-Energy Research](#), NIU & Growth Dimensions AgTech Initiative: *Future of Energy and Agriculture*, Belvidere, IL, April 27, 2005.
- [Nanofluids \(PDF\)](#), NIU Sigma Xi Seminar, October 25, 2005.
- [Uncertainty Analysis of Measurement Results](#), NASA Glenn Research Center-Ohio Aerospace Institute, August 1, 2003.

Publications:

Refereed Articles in Encyclopedias/Handbooks/State-of-the-art Review Series:

- Secco, R.A., Kostic, M., and J. R. deBruyn, "*Fluid Viscosity Measurement*," In "The Measurement, Instrumentation and Sensors Handbook, 2nd Edition" (J.G. Webster, Editor-in-Chief), CRC Press, Boca Raton, 2013.
- Kostic, M., "*Critical Issues in Nanofluids Research and Application Potentials*," Chapter in "Nanofluids: Research, Developments and Applications," (Editor Y. Zhang), Nova Science Publisher, Inc., 2013.
- Kostic, M., "*Energy: Physics*," Chapter in "Encyclopedia of Environmental Management" (Editor S.E. Jorgensen), Vol. II. (Print Version ISBN 978-1439829271). DOI: 10.1081/E-EEM-120046144, p. 808-823, CRC Press 2012.

- Kostic, M., *Energy: Global and Historical Background*, In Encyclopedia of Energy Engineering (B. L. Capehart, Editor), Taylor & Francis/Marcel Dekker, © 2007.
- Kostic, M., *Physics of Energy*, In Encyclopedia of Energy Engineering (B. L. Capehart, Editor), Taylor & Francis/Marcel Dekker, © 2007.
- Kostic, M. and L. G. Reifschneider, "*Extrusion Die Design**" In Encyclopedia of Chemical Processing (S. Lee, Editor); (c) 2005 by Dekker, ISBN: 0-8247-5563-4 (Hardcover 5 Volume Set, 3640 pages); Taylor & Francis, ISBN: 0-8247-5499-9 (electronic edition), 2006.
- Kostic, M., "*Work, Power, and Energy*," In Encyclopedia of Energy (C.J. Cleveland, Editor-in-Chief), Volume 6, pp. 527-538, ISBN: 0-12-176480-X, Elsevier, 2004.
- LeBlanc, G., Secco, R.A., and Kostic, M. "*Viscosity*" in "*The Measurement, Instrumentation and Sensors Handbook*" (J.G. Webster, Editor-in-Chief), ISBN: 0-8493-8347-1, CRC Press, 1999.
- J.P. Hartnett and M. Kostic, *Heat Transfer to Newtonian and Non-Newtonian Fluids in Rectangular Ducts*. In *Advances in Heat Transfer*, Vol. 19, p.247-356, Academic Press, 1989.

Refereed Journal and Proceedings Publications

(See above for *Refereed Articles in Encyclopedias/Handbooks/State-of-the-art Review Series*).

- Kostic, M., *Entropy Generation Results of Convenience But without Purposeful Analysis and Due Comprehension—Editorial*. [Entropy 2016, 18\(1\), 28; doi: 10.3390/e18010028](#).
- Kostic, M., [The Elusive Nature of Entropy and Its Physical Meaning](#), *Entropy* **2014**, 16(2), 953-967; doi:10.3390/e16020953
- Kostic, M., *Friction and Heat Transfer Characteristics of Silica and CNT Nanofluids in a Tube Flow*, The 8th WSEAS International Conference on ENERGY & ENVIRONMENT (EE'13), Rhodes Island, Greece, July 16-19, 2013. In "*Recent Advances in Energy and Environmental Management*"-PDF. ISSN: 2227-4359, ISBN: 978-960-474-312-4, WSEAS Press, 2013.
- Elapolu, P., Majumdar, P., Lottes, S., and Kostic, M., *Development of a Three-Dimensional Iterative Methodology for Flow Scouring around Bridge Piers*, Proceedings of the 2012 ASME Summer heat Transfer Conference, HT2012-58491, Puerto Rico, July 2012.
- Elapolu, P., Majumdar, P., Lottes, S., and Kostic, M., *Development of a Three-Dimensional Iterative Methodology for Flow Scouring around Bridge Piers*, Proceedings of the 2012 ASME Summer heat Transfer Conference, HT2012-58491, Puerto Rico, July 2012.
- Tulimilli, B. R., Lottes, S.A., Majumdar, P., Kostic, M., *Three-Dimensional Scouring Analysis for Open Channel Pressure Flow Scour Under Flooded Bridge Decks*, Proceedings of the ASME 2011 International Mechanical Engineering Congress & Exposition, IMECE2011-65529 (7 pp), November 11-17, 2011, Denver, Colorado, USA, ASME, New York, 2011.
- Kostic, M., *Revisiting The Second Law of Energy Degradation and Entropy Generation: From Sadi Carnot's Ingenious Reasoning to Holistic Generalization*, Symposium on: "*The Second Law of Thermodynamics: Status and Challenges*": The 92nd Annual Meeting of the Pacific Division of the American Association for the Advancement of Science (AAAS), University of San Diego, San Diego, CA, June 12-16, 2011. AIP Conf. Proc. 1411, 327-350 (2011); doi: 10.1063/1.3665247.
- Biswas, D., Lottes, S., Majumdar, P., and Kostic, M., *Development of an Analysis Methodology for Pressure Flow Scour under Flooded Bridge Decks Using Commercial CFD Software*, Proceedings of the ASME 2010 International Mechanical Engineering Congress & Exposition, IMECE2010-37198 (12 pp), November 12-18, 2010, Vancouver, British Columbia, Canada, ASME, New York, 2010.
- Kostic, M. and Walleck, C., *Design of a Steady-State, Parallel-Plate Thermal Conductivity Apparatus for Nanofluids And Comparative Measurements With Transient HWTC Apparatus*, Proceedings of the ASME

2010 International Mechanical Engineering Congress & Exposition, IMECE2010-38187 (12 pp), November 12-18, 2010, Vancouver, British Columbia, Canada, ASME, New York, 2010.

- Tulumilli, B. R., Majumdar, P., Kostic, M., and Lottes, S., *Development of CFD Simulation for 3-D Flooding Flows and Scouring Around Bridge Structures*, Proceedings of the 3rd WSEAS International Conference on URBAN PLANNING AND TRANSPORTATION (UPT '10), Corfu Island, Greece, July 22-24, 2010. In LATEST TRENDS on URBAN PLANNING and TRANSPORTATION (Editor: M. Jha), ISSN: 1792-4286; ISBN: 978-960-474-204-2, p. 129-135, WSEAS Press 2010.
- Majumdar, P., Kostic, M. and Adhikary, B.D., *Simulation of Open Channel Turbulent Flow Over Bridge Decks and Evolution of Scour Pit beneath the Bridge under Flooding Conditions*, Proceedings of IMECE2009-13258 (12 pp), 2009 ASME International Mechanical Engineering Congress & Exposition, November 13-19, 2009, Lake Buena Vista, Florida, ASME, New York, 2009.
- Kostic, M, Majumdar, P, and Biswas, D., *Bridges and Environment: Development of an Iterative Scouring Procedure for Implementation in CFD Code for Different Bridge Flooding Conditions*, Proceedings of the 3rd WSEAS International Conference on ENERGY PLANNING, ENERGY SAVING, ENVIRONMENTAL EDUCATION (EPESE'09), University of La Laguna, Tenerife, Canary Islands Spain, July 1-3, 2009. In ENERGY PROBLEMS AND ENVIRONMENTAL ENGINEERING (Editors: L Perlovsky, D.D. Dionysiou, L.A. Zadeh, M. Kostic, C.G. Concepcion, H. Jaberg, N.E. Mastorakis, A. Zaharim, and K. Sopian), ISSN: 1790-5095; ISBN: 978-960-474-093-2, p. 182-190, WSEAS Press. 2009
- Kostic, M and Simham, K.C., *Computerized, Transient Hot-Wire Thermal Conductivity Apparatus for Nanofluids*, Proceedings of the 6th WSEAS International Conference on HEAT and MASS TRANSFER (HMT'09), Ningbo, China, January 10-12, 2009. In RECENT ADVANCES in HEAT and MASS TRANSFER (Editor: Lifeng Xi), ISBN: 978-960-474-039-0; ISSN: 1790-5095, p. 71-78, WSEAS Press. 2009. (Best HMT09 Conference Paper)
- Patil, S, Kostic, M. and Majumdar, P., *Computational Fluid Dynamics Simulation of Open-Channel Flows Over Bridge-Decks Under Various Flooding Conditions*, Proceedings of the 6th WSEAS International Conference on FLUID MECHANICS (FLUIDS'09), Ningbo, China, January 10-12, 2009. In RECENT ADVANCES in FLUID MECHANICS (Editor: Lifeng Xi), ISBN: 978-960-474-040-6; ISSN: 1790-5095, p. 114-120, WSEAS Press. 2009.
- Adhikary, B. D., Majumdar, P. and Kostic, M., *CFD Simulation of Open Channel Flooding Flows and Scouring Around Bridge Structures*, Proceedings of the 6th WSEAS International Conference on FLUID MECHANICS (FLUIDS'09), Ningbo, China, January 10-12, 2009. In RECENT ADVANCES in FLUID MECHANICS (Editor: Lifeng Xi), ISBN: 978-960-474-040-6; ISSN: 1790-5095, p. 106-113, WSEAS Press. 2009.
- Kostic, M., *Sadi Carnot's Ingenious Reasoning of Ideal Heat-Engine Reversible Cycles*, Proceedings of the 4th IASME/WSEAS International Conference on ENERGY, ENVIRONMENT, ECOSYSTEMS and SUSTAINABLE DEVELOPMENT (EEESD'08), Algarve, Portugal, June 11-13, 2008. In NEW ASPECTS OF ENERGY, ENVIRONMENT, ECOSYSTEMS and SUSTAINABLE DEVELOPMENT (Editors: T. Panagopoulos, T. Noronha Vaz , M. D. Carlos Antunes), ISBN: 978-960-6766-71-8; ISSN: 1790-5095, p.159-166, WSEAS Press, 2008.
- Kostic, M., *Effective Thermal Conductivity Errors by Assuming Unidirectional Temperature and Heat Flux Distribution Within Heterogeneous Mixtures (Nanofluids)*, Proceedings of the 5th WSEAS International Conference on HEAT and MASS TRANSFER (HMT'08), Acapulco, Mexico, January 25-27, 2008. In THEORETICAL and EXPERIMENTAL ASPECTS of HEAT and MASS TRANSFER (Editors: J. Krope, S. H. Sohrab, F.-K. Benra), ISBN: 978-960-6766-31-2; ISSN: 1790-2769, p.44-49, WSEAS Press. 2008.
- Kostic, M and Vohra, P., *NIU-Engineering Energy Research Activities and Challenges*, Proceedings of the 5th WSEAS International Conference on HEAT and MASS TRANSFER (HMT'08), Acapulco, Mexico, January 25-27, 2008. In THEORETICAL and EXPERIMENTAL ASPECTS of HEAT and

MASS TRANSFER (Editors: J. Krope, S. H. Sohrab, F.-K. Benra), ISBN: 978-960-6766-31-2; ISSN: 1790-2769, p.37-43, WSEAS Press. 2008.

- Kostic, M., “*Analysis of Enthalpy Approximation for Compressed Liquid Water,*” ASME Journal of Heat Transfer, Vol. 128, p.421-426, May 2006.
- Kostic, M., “*Critical Issues and Application Potentials in Nanofluids Research,*” ASME-MN2006 Multifunctional Nanocomposites 2006 International Conference Proceedings, September 20-22, 2006, Honolulu, Hawaii, ASME Proceedings, New York, 2006.
- Kostic, M., Vijay Kumar Sankaramadhi, and Kalyan Chaitanya Simham, “*New Educational Lab: Measurement And Uncertainty Evaluation Of Nanofluid Particle Concentration Using Volumetric Flask Method,*” ASEE-2006 IL-IN Section Conference Proceedings, American Society for Engineering Education, Fort Wayne, IN, March 31-April 1, 2006.
- Kostic, M., Srinivasa Rao Vaddiraju, Srinivas Majji, Shashank B. Tirumala, and Dan Wu, “*Design of Modern, Integrated Laboratory- Stations (ILS) for Engineering Experimental Courses,*” ASEE-2005 IL-IN Section Conference Proceedings, American Society for Engineering Education, DeKalb, IL, April 1-2, 2005.
- Kostic, M., *Analysis of Enthalpy Approximation for Compressed Liquid Water,* IMECE2004, ASME Proceedings, ASME, New York, 2004.
- Kostic, M., *Irreversibility and Reversible Heat Transfer: The Quest and Nature of Energy and Entropy,* IMECE2004, ASME Proceedings, ASME, New York, 2004.
- Kostic, M., “*Fuel-Cell and Heat-Engine Energy-Conversion Comparative Analysis,*” ASEE-2004 IL-IN Section Conference Proceedings, “*Engineering Engineering Education,*” American Society for Engineering Education, East Peoria, March, 2004.
- Vaddiraju, S.R., M. Kostic, L. Reifschneider, A. Pla-Dalmau, V. Rykalin, and A. Bross, “*Extrusion Simulation and Experimental Validation to Optimize Precision Die Design,*” ANTEC 2004--*Proceedings of the 62nd Annual Technical Conference & Exhibition,* Vol. L, Chicago, IL, Society of Plastics Engineers, pp. 76--80, May 16--20, 2004.
- Reifschneider, L.G., M. Kostic, and S.R. Vaddiraju, “*Computational Design of a U-Profile Die and Calibrator,*” ANTEC 2004--*Proceedings of the 62nd Annual Technical Conference & Exhibition,* Vol. L, Chicago, IL, Society of Plastics Engineers, pp. 246--250, May 16-20, 2004.
- Kostic, M., “[Sampling and Aliasing: An Interactive and On-Line Virtual Experiment - “What we ‘see’ is not what it is!”](#)”, ASEE 2003 Annual Conference Proceedings, American Society for Engineering Education, 2003.
- Kostic, M., “*Leadership and Information Technologies in Education,*” ASEE-2002 IL-IN Section Conference Proceedings: “*Engineering Education in Changing Economy,*” Illinois Institute of Technology and American Society for Engineering Education, 2002.
- Kostic, M., *Interactive Simulation: "A Virtual Instrument to Unleash Sampling and Aliasing,"* Syllabus Fall 2001 Conference - Next Steps: Moving Forward with Campus IT, (Proceedings) Danvers, MA, 2001.
- Kostic, M., “*Interactive Simulation with a LabVIEW™ Virtual Instrument Including Magnitude Change, Phase Shift and Aliasing: "What we see is not what it is - PART II!"*” NIWeek2000 Annual Conference, National Instruments, Austin, TX, 2000.
- Kostic, M., “*The Art of Signal Sampling and Aliasing: Simulation with a LabVIEW™ Virtual Instrument "What we see is not what it is!"*” NIWeek 99 Annual Conference, National Instruments, Austin, TX, 1999.

- Kostic, M. and H. Tong, "Investigation of Thermal Conductivity of a Polymer Solution as Function of Shearing Rate," The 1999 International Mechanical Engineering Congress and Exposition (IMECE), Nashville, TN, 1999; in ASME Proceedings (L.C. Witte, Editor), HTD-Vol. 364-4, Vol.4, p.15-21, ASME, New York, 1999.
- Kostic, M., "Data Acquisition And Control for An Innovative Thermal Conductivity Apparatus Using LabVIEWâ Virtual Instrument." Laboratory Robotics and Automation Journal, Vol.10, No.2, pp.107-111, Wiley, 1998.*
- Kostic, M., "Integration of New Technologies in Engineering Experimentation Courses." ASEE-1998 IL-IN Section Conference: *"Forcast for the Future,"* Proceedings of American Society for Engineering Education, 1998.
- Kostic, M., "Integration of Data Acquisition and LabVIEW® in Experimental Methods Courses" NIWeek 98 Annual Conference, National Instruments, Austin, TX, 1998.
- Kostic, M., "Data Acquisition And Control Using LabVIEWâ Virtual Instrument For An Innovative Thermal Conductivity Apparatus." NIWeek 97 Annual Conference, National Instruments, Austin, TX, 1997. Published also in: *"Virtual Instrumentation in Education: 1997 Conference Proceedings"* Massachusetts Institute of Technology-June 12, 1997 and University of California at Berkeley, June 27, 1997, P/N 350357A-01, p.131-136, National Instruments Corporation, 1997.
- Kostic, M., *"Instrumentation with Computerized Data Acquisition for an Innovative Thermal Conductivity Apparatus."* ASEE 1997 Annual Conference Proceedings, American Society for Engineering Education, 1997.
- M. Kostic, *"A New Natural, Process-oriented, Iteration Method Using a Boundary-Incursion Mapping,"* The 67th Annual Meeting of the Society of Rheology, Sacramento, CA, October 1995.
- M. Kostic, *"Different Non-Newtonian Reynolds and Prandtl Numbers, Their Usage and Relationships,"* The 1994 ASME International Mechanical Engineering Congress and Exposition, Chicago, IL, In *"Developments in Non-Newtonian Flows: FED-Vol.206/AMD-Vol.191,"* ASME, p. 163-169, New York, (1994).
- M. Kostic, *"On Turbulent Drag and Heat Transfer Reduction Phenomena and Laminar Heat Transfer Enhancement in Non-Circular Duct Flow of Certain Non-Newtonian Fluids,"* Int. J. Heat & Mass Transfer, Vol.37, Suppl.1, p.133-147 (1994).
- M. Kostic, *"The ultimate asymptotes and possible causes of friction drag and heat transfer reduction phenomena,"* Journal of Energy Heat and Mass Transfer, Vol.16, No.1, p.1-14, (1994).
- J. Jimenez and M. Kostic, *"A Novel Computerized Viscometer/Rheometer,"* Review of Scientific Instruments Journal, Vol.65 (1), p.229-241, American Institute of Physics (1994).
- M. Kostic, *"Influence of viscosity function simplification on non-Newtonian velocity and shear rate profiles in rectangular ducts."* Int. Comm. Heat Mass Transfer J., Vol.20, p.515-525 (1993).
- M. Kostic, *"Lubrication flow in a narrow gap,"* Appl. Mathcad J.(electronic version), Vol.2, No.3, p.1-13, MathSoft, Cambridge, MA (1993).
- J.P. Hartnett and M. Kostic, *"Turbulent friction factor correlations for power law fluids in circular and non-circular channels."* Int. Comm. Heat Mass Transfer, Vol. 17, p. 59-65 (1990).
- M. Kostic and J.P. Hartnett, *"Heat transfer to water flowing turbulently through a rectangular duct with asymmetric heating."* Int. J. Heat Mass Transfer, Vol. 29, p. 1283-1291 (1986).
- M. Kostic and J.P. Hartnett, *"The effects of fluid elasticity on laminar flow in rectangular duct."* ZAMM, (Z. Angew. Math. Mech.), Vol. 66, p. T239- T241, German Academy of Sciences (1986).

- J.P. Hartnett and M. Kostic, "Heat transfer to a viscoelastic fluid in laminar flow through a rectangular channel." *Int. J. Heat Mass Transfer*, Vol. 28, p. 1147-1155 (1985).
- M. Kostic and J.P. Hartnett, "Heat transfer performance of aqueous polyacrylamide solutions in turbulent flow through a rectangular channel." *Int. Comm. Heat Mass Transfer*, Vol. 12, 483-490 (1985).
- M. Kostic and J.P. Hartnett, "Predicting turbulent friction factors of Non-Newtonian fluids in non-circular ducts." *Int. Comm. Heat Mass Transfer*, Vol. 11, p. 345-352 (1984).
- S. Oka, M. Kostic, and B. Repic, "An Experimental Furnace for Investigation of Combustion and Ash Deposit Processes of Pulverized Coal"; in *Fouling and Corrosion in Steam Generators* (Editors: D. Savic and I. Opik), The Boris Kidrich Institute of Nuclear Sciences and Tallinn Technical University, USSR, Belgrade, p. 135-145, 1980 (*In English*).

Refereed Journal Publications in Serbian (ex-Yugoslav native language):

- M. Kostic, "The Viscoelastic Fluids in Energy Engineering." *Tehnika J.*, Vol. 41, No. 2, p. 127-131 T-TO5 (1986).
- M. Kostic, "The Measurement Probe for Sampling Solid Particles and Gases from Tube Furnace." *Tehnika J.*, Masinstvo, No. 12, p. (1980).
- M. Kostic, "The First Results of Kolubara Coal Combustion in Laboratory Tube Furnace." *Tehnika J.*, No. 20, p. 2149-2154 (1979).
- M. Kostic, "Exergy, Not Energy (A Contribution to the Exergy Analysis of Energy Processes)." *Tehnika J.*, No. 11 p. 1555-1558 (1978).
- M. Kostic, S. Oka, Lj. Jovanovic, and B. Repic, "Experimental Apparatus for Investigation of Pulverized Coal Combustion." *Termotehnika J.*, No. 4, p. 90-95 (1978).
- M. Kostic, "Mankind Should Not Be Worried About Energy and Raw Materials", *Tehnika J.*, No. 9, p. 1421-1428 (T1-T8) (1975).

Patents:

- Kostic, M., M. Golubovic, J.R. Hull and S.U.S. Choi, [ONE-STEP METHOD FOR THE PRODUCTION OF NANOFLUIDS](#), [DOE-ANL invention S-105,821](#). U.S. Patent Number: [US 7,718,033 B1](#), (PDF), Publication Date 18 May 2010.
- Kostic, M., M. Golubovic, J.R. Hull and S.U.S. Choi, [One-Step Method for the Production of Nanofluids](#), ANL invention S-122,261, [U.S. Patent-Divisional Application No.12/729,494](#) filed by U.S. Department of Energy (Brian John Lally/Katherine Baldwin, Patent Attorney) on **3/23/2010**. Additional Claims to the above.
- Kostic, M., [Hybrid Heater - Cooler Chiller Integrator with Thermal Transformer \(HHCCI-TT\) System for Efficient Heating, Cooling, Refrigeration, and Air Conditioning](#), U.S. Provisional Patent Application Number: [61/297,958](#) of 25 JANUARY 2010.

Exhibits:

- The Learning Technologies Showcase 2001: "On-Line Samples/Modules for Using Interactive and Internet Learning Aids" NIU Regency Room, 28 March 2001. <http://www.kostic.niu.edu/showcase/>
- The Learning Technologies Showcase 2002: "Energy and Environment" NIU Regency Room, March 2002.

Developed and posted the following Web articles to enhance our academic program and for public use:

- Kostic, M., "An Urgent Need for New Vision and Strategy for Use of New Technologies in Education," http://www.ceet.niu.edu/faculty/kostic/NewTech_Vision.htm
- Kostic, M., "Tips for Learning and Academic Skills Improvement," http://www.ceet.niu.edu/faculty/kostic/self_improve.htm
- "Filling-up and Overflow in a Tank Example," http://www.ceet.niu.edu/faculty/kostic/problem_solving_example/index.html
- Kostic, M, *The Art of Signal Sampling and Aliasing*: "What we see is not what it is!" <http://www.ceet.niu.edu/faculty/kostic/aliasing.htm>, an interactive "what-if, virtual experiment over the Internet (part of the 1999 Summer Grant); and "The Art of Signal Sampling and Aliasing: *What we see is not what it is!-PART II*." (part of the 2000 Dean's Summer Grant); www.kostic.niu.edu/sampling.htm and www.kostic.niu.edu/aliasing.htm
- Kostic, M., "Some Suggestions for Problem Solving," with an example, a philosophy and methodology of problem solving. (part of the 1999 Summer Grant); and "Creative Problem Solving Methodology and Resources:An interdisciplinary project to promote creativity and information technology," (part of the 2000 CIUE Summer Grant). http://www.ceet.niu.edu/faculty/kostic/Problem_Solving.html
- Kostic, M, On-Line Samples/Modules for Using Interactive and Internet Learning Aids (as a part of the 2001 Dean's Summer Project): <http://www.kostic.niu.edu/SummerProjects.html>
- List of developed Web lecture notes etc: www.kostic.niu.edu/LectureNotesHandouts.htm
- List of developed various Web Handouts including MathCAD and LabVIEW files: www.kostic.niu.edu/Handouts390n490.htm
- NSF Proposal Exhibit: "Enhancing Quality of Learning by Interactive Integration of Engineering Experimentation and Computation," www.kostic.niu.edu/NSF-CCLI-SUMMARY.htm .

Memberships and Professionally oriented public service activities:

- Member of the *American Association for the Advancement of Science* (AAAS), 2011-present
- Member of the *American Society of Mechanical Engineers* (ASME): active in Fluids Engineering, Heat Transfer, Advanced Energy Systems, and Solar Energy Divisions, 1988-present
- Member of the *Society of Rheology*, a member society of the *American Institute of Physics* (AIP), 1993-present.
- Member of *American Society of Engineering Education* (ASEE), 1997-present.Ph.D. Thesis External Examiner for ANNA University, Chennai – 600 025, India, 2001-present.
- Reviewer of scientific and professional articles and books for McGraw-Hill, John Wiley & Sons, Marcel Dekker, Inc., ASME journals and conferences, International Journal for Heat and Mass Transfer, Numerical Heat Transfer Journal, Chemical Eng. Journal, Canadian Journal of Physics, etc.
- Reviewer of R&D proposals for National Science Foundation, University of California Energy Institute, American Association for the Advancement of Science, and other national and international government and professional institutions.

Professional Development:

NOTE: Only small number of selected activities are listed.

- The 2011 & 2012 *International Institute Nanotechnology Annual Symposium* (Northwestern University), Hilton Orrington Hotel, Evanston, Illinois 60201, 2011 & 2012.
- *Adapco CFD STAR-CD and Foundation Training* (funded by ANL), Plymouth, MI, June 4-8, 2007
- *The 2nd ASME Nano-training Bootcamp* (Twenty Courses in Nanoscale Science And Engineering); Evanston, IL, June 29-July 2, 2004.
- *Fluent's FIDAP Intensive CFD Training and PolyFLOW Modeling Viscoelastic Flows*, Fluent, Inc., Evanston, IL, May and June 2002.
- *CSUI-UIUC Symposium on New Approaches to Teaching and Learning Science: "Multimedia, World Wide Web, Cooperative Learning*, University of Illinois at Urbana-Champaign, October 1999.
- *"Multi-Day Workshop and Conference with Hands-On Immersion in New Approaches to Teaching Creativity and Applied Innovation,"* National Collegiate Inventors and Innovators Alliance - NCIIA Annual Conference on Inventions, Innovations and Entrepreneurship in Curriculum, Washington, D.C., March 1999.
- *Hands-On Sessions on Computerized Instrumentation and Control*, "NI-Week'97,'98,'99, '00: Annual International Conferences," National Instruments, Austin, TX, August, 1997-2000.
- *Intensive Seminar with Work-shops on Internet and New Technologies*, Interinstitutional Faculty Summer Institute on Learning Technologies, University of Illinois at Urbana-Champaign, May 1997.
- *Heat transfer in non-Newtonian systems*, Lecturer: R.G. Griskey, American Institute of Chemical Engineers, Minneapolis (1991).
- *Multiphase flow and heat transfer for industrial applications*, Lecturers: J.M. Delhay, M.I. Corradini, M. Ishii, G. Kocamustafaogullari, M. Tan, J.A. Orozco, Midwest University Energy Consortium and Argonne National Laboratory, 1988.
- *High temperature heat exchangers*, Lecturers: A.E. Bergles, R. Echigo, P.J. Heggs, A.A. Zhukauskas, F. Kreith, International Centre for Heat and Mass Transfer, Dubrovnik, Yugoslavia, 1985.
- *Internship in Manufacturing Engineering*; Hannemann Co., Duesseldorf (W. Germany), 1976.
- *Internship in Energy Conservation Analysis*; Kraftanlagen AG., Heidelberg (W. Germany); 1975.
- *Moscow Power Institute- University of Belgrade Summer Exchange Student Program*; Moscow Power Institute, Former Soviet Union, (1973).

University Courses Taught:

- MEE 101 Energy and Environment
- MEE 200 Energy and Environment
- MEE 340 Fluid Mechanics
- MEE 350 Thermodynamics
- MEE 351 Applied Thermodynamics
- MEE 352 Heat Transfer
- MEE 390 Experimental Methods in Mechanical Engineering I
- MEE 452 Design of Thermal Systems
- MEE 482 Senior Mechanical Engineering Design Project
- MEE 490 Experimental Methods in Mechanical Engineering II
- MEE 540/640 Advanced Fluid Mechanics
- MEE 555/655 Conduction Heat Transfer
- MEE 597/697 Independent Study

- MEE 599/699 Master's Thesis

Theses adviser/director:

- S. Esakki Muthu, "Investigation on Solar Air Heater Integrated With Packed Bed Latent Heat Storage System," Ph.D. Thesis External Examiner for ANNA University, Chennai – 600 025, India, 2013.
- Godson Asirvatham, "Experimental Studies on Heat Transfer Characteristics of Silver/Water Nanofluid," Ph.D. Thesis External Examiner for ANNA University, Chennai – 600 025, India, 2010-2011.
- Craig Netemeyer, "Exploring Flow and Heat Transfer Characteristics of New Hybrid Polymer-Nanofluids," M.S. Thesis. Department of Mechanical Engineering, 2011.
- Phani Ganesh, Development of a Three-Dimensional Iterative Methodology Using a Commercial CFD Code For Flow Scouring Around Bridge Piers, M.S. Thesis. Department of Mechanical Engineering, October 2010.
- Vishnu Vardhan Reddy Pati, "CFD Modeling and Analysis of Flow through Culverts, M.S. Thesis. Department of Mechanical Engineering," M.S. Thesis. Department of Mechanical Engineering, October 2010.
- Bhaskar Rao Tulimilli, "Development of a Three-dimensional Scouring Methodology and its Implementation in Commercial CFD Code for Open Channel Flow Over a flooded Bridge Deck," M.S. Thesis. Department of Mechanical Engineering, June 2010.
- Casey Walleck, "Development of Steady-State, Parallel Plate Thermal Conductivity Apparatus For Poly-Nanofluids and Comparative Measurements With Transient HWTC Apparatus," M.S. Thesis. Department of Mechanical Engineering, Completed in September 2009.
- Dipankar Biswas, "Development of an Iterative Scouring Procedure for Implementation in CFD Code for Open Channel Flow under Different Bridge Flooding Conditions," M.S. Thesis. Department of Mechanical Engineering, June 2009.
- Bishwadipa Das Adhikary, "Computational Fluid Dynamics Analysis for Open Channel Flow over Bridge Decks with Scouring," M.S. Thesis. Department of Mechanical Engineering, July 2008.
- Kalyan Chaitanya Simham, "Development of Computerized Transient Hot-Wire Thermal Conductivity (HWTC) Apparatus for Nanofluids," M.S. Thesis. Department of Mechanical Engineering, June 2008.
- Sachin Patil, "Computational Fluid Dynamics Analysis for Open Channel Flow over Bridge Decks under Various Flood Conditions," M.S. Thesis. Department of Mechanical Engineering, April 2008.
- Vijay Kumar Sankaramadhi, "Development of Advanced Metal Cutting Nanofluids," M.S. Thesis. Department of Mechanical Engineering, December 12, 2006.
- Shashank Tirumala, "Computerized Measurement of Motor Characteristics with Interactive Uncertainty Analysis," M.S. Thesis. Department of Mechanical Engineering, October 27, 2006.
- Srinivas Majji, "Development of Interactive Measurement System for Motor Characteristics Using PC Data Acquisition and LabVIEW Software," M.S. Thesis. Department of Mechanical Engineering, March 9, 2006.
- Dan Wu, "Die Design Improvement Using Inverse Extrusion Simulation and Polymer-Scintillator Viscoelastic Properties," M.S. Thesis. Department of Mechanical Engineering, defended thesis on July 8, 2004, (graduated in Spring 2005).
- Srinivasa Vaddiraju Thesis, "Extrusion Simulation and Optimization of Profile Die Design," M.S.

Thesis. Department of Mechanical Engineering, defended thesis on March 25, 2004 (graduated in Spring 2004).

- Haibo Tong, "A Novel Thermal Conductivity Measurement of Fluids with Changing and Anisotropic Structure Due to Shearing Flow," M.S. Thesis. Department of Mechanical Engineering, NIU, completed in Summer 1997.
- V.V.V. Raja Sekhar, "Development of Instrumentation with Data Acquisition for Thermal conductivity Apparatus," M.S. thesis, not finished, Department of Mechanical Engineering, NIU, student left in August 1996.
- Lawrence W. Holz, "*The heat transfer and fluid flow of water and a polyacrylamide solution in a square duct*," M.S. thesis, Department of Mechanical Engineering, NIU, completed in August 1994.
- Shahid Hussain, "*Investigation of the viscosity of non-Newtonian fluids and design of a square duct apparatus*," M.S. thesis not finished, Department of Mechanical Engineering, NIU, student left for employment in 1993.
- Zorica Mihajlovic, "*Hydrodynamic and heat transfer study of non-Newtonian fluids in a square duct*," M.S. thesis not finished, Department of Mechanical Engineering, NIU, student left in 1992.
- Jorge Jimenez, "*Design, development and fabrication of a computerized viscometer/rheometer*," M.S. thesis, Department of Mechanical Engineering, NIU, completed in Dec.1992.
- Jia Wang, "*A numerical study of Newtonian and non-Newtonian fluids flow in rectangular ducts*," M.S. thesis, Department of Mechanical Engineering, NIU, completed in Dec.1992.

Graduate School Dean's Designee for Ph.D. thesis defense in Math and Chemistry Departments:

- Matthias M. Weiss, Limit-Set Action of Discrete Mobius Groups; Ph.D. Dissertation, Mathematical Sciences (Advisor: Peter Waterman, 753-0566), June 14, 2000.
- Mohammed Zaitouh, "*Spectroscopic Investigations of Chemically Doped Sol-gel Glass*," Ph.D. Dissertation, Department of Chemistry, NIU, June 17, 1998.
- Jorge Alvarado, "*Studies and comparisons of reductive pyrolysis sample-introduction and far-ultraviolet spectrometry with helium microwave-induced plasmas*," Ph.D. Dissertation, Department of Chemistry, NIU, April 30, 1993.

Improvement of Teaching and Enhancement of Academic Programs:

- *Design of Modern Engineering, Integrated Laboratory-Stations (ILS) for experimental and design courses:* The ILS design incorporates modern developments in instrumentation and experimentation, particularly modern sensors, and computerized data acquisition (DAQ) with data analysis, and need to improve efficiency in presenting ever increasing context in limited number of contact and lab hours. Virtually all lab demonstrations for MEE 390 may be developed around this ILS stations and they could and should be replicated in as many units as needed for our class size and future enrolment. The ILS looks like a “*Mechatronics bench*” with typical mechanical and electronic instruments used by engineers in industry and research labs today. Since the ILS have standard industrial input/output connections and interfaces, thus providing capability for expansion of add-on and/or mobile components, this will further facilitate undergraduate research experience in other science, engineering, and design courses, including engineering competitions. A number of universities are restructuring their lab courses in this direction, with significant curriculum impact, to accommodate substantial changes in technology and industry.
- Exchanged lab teaching experiences with Prof. R.S. Figliola, author of textbook, "*Theory and Design for Mechanical Measurements.*" In August 1996 visited Georgia Institute of Technology where we exchanged experiences in teaching and laboratory activities. I learned in details how they teach laboratory courses and use advanced experimental and computational resources. I am trying to implement some of those in our curriculum.
- Continued effort (always with innovative improvements) and personal attention for students' Lab Projects and report writing (MEE 390 and 490); *several improvements and editing for each project.* Use of *MathCAD* software for DSP (Fourier analysis) and non-linear curve fitting in MEE 490 and improvements in using *LabVIEW* for data acquisition (DAQ). Hands-on exercises and demonstration of a research apparatus's DAQ for MEE 490 classes.
- Participated in a multi-disciplinary interactive workshop “*Critical Thinking And Activated Students: Discoveries And Recoveries Of “The Great Ah Ha!”*” by Distinguished Teaching Professors Richard E. Baker and William C. Johnson, Holmes Student Center, Feb.14, 1996.
- Participated in a National Video Conference (Live via Satellite), *Enhancing & Evaluating College Teaching: The Key Role of Administrators, Faculty and Faculty Developers*”, March 22, `1996 (Faculty Development Office, Gabel Hall)
- Attended a number of seminars (see Professional Development section below), including the Seminar on Accommodative Teaching=Student Success Program, NIU’s Presidential Commission on Persons with Disabilities, NIU, June 5-8, 2000.
- Kostic, M., Resource Links for Engineering Design (as a part of the first time teaching MEE 482): <http://www.kostic.niu.edu/eng-design-resources.html>

Grants, Fellowships, and Leaves of Absence:

External Grants while at NIU:

- M. Kostic (PI/Co-PI) and P. Majumdar (PI/co-PI), “*Hydraulics & Aerodynamics Research in Transportation Applications: Phase-IV,*” DOT TRACC Project, Argonne National Laboratory, October 1, 2009-September 30, 2010.
- M. Kostic (PI/Co-PI) and P. Majumdar (PI/co-PI), “*Hydraulics & Aerodynamics Research in Transportation Applications: Phase-III,*” DOT TRACC Project, Argonne National Laboratory, October 1, 2008-September 30, 2009.
- M. Kostic (I), *Railroad Energy Efficiency* (C. Mirman, PI): (a) Diesel Engine Emission Control Group, and (b) Tribology Group, DOE Project, September 1, 2008 – August 31, 2009.
- M. Kostic (PI), *Exploring New Hybrid Polymer-Nanofluids with Enhanced Flow and Heat Transfer*

Characteristics, National Science Foundation (NSF), August 15, 2007-January 31, 2008.

- M. Kostic (PI/Co-PI) and P. Majumdar (PI/co-PI), “*Hydraulics & Aerodynamics Research in Transportation Applications: Phase-II*,” DOT TRACC Project, Argonne National Laboratory, October 1, 2007-September 30, 2008.
- M. Kostic (PI/Co-PI) and P. Majumdar (PI/co-PI), “*Hydraulics & Aerodynamics Research in Transportation Applications: Phase-I*,” DOT TRACC Project, Argonne National Laboratory, May 16, 2007-September 30, 2007.
- M. Kostic (PI), “*A novel thermal conductivity measurement of fluids with changing and anisotropic structure due to shearing flow*,” National Science Foundation (NSF), Sept. 1, 1995-February, 1997.
- M. Kostic (PI): “*Further Development and Fabrication of a Computerized Viscometer/Rheometer*,” AMOCO Oil Company, Research and Development Department, Naperville, IL, July 1-December 31, 1991.

External Grants at other institutions while at NIU:

- M. Kostic (PI), ANL 2005 Summer Faculty Research Participation Grant, 2005.
- M. Kostic (PI), ANL 2004 Summer Faculty Research Participation Grant, 2004.
- M. Kostic (PI), Sabbatical Grant, Fermi National Accelerator Laboratory, Fall 2003.
- M. Kostic (PI), NASA Faculty Fellowship Grant, NASA Glen Research Center, Cleveland, OH, Summer 2003.

Other Grants within NIU:

- Development of Tribological Nanofluids, CTC/Falex Center for Tribology and Coatings, NIU-ROCK Project, Jan 2005-Aug. 2006.
- Nanofluids Project, Physics-InSET. January 2005- August, 2006.
- NIU-CIUE Summer Grant: Developing MEE 390 Computerized Experiments using New Integrated Laboratory-Stations (ILS), 2004
- ASME 2004 Nano Training Bootcamp, NIU InSET, June 2004.
- Scintillator Extrusion and Die Design for Detector Development (with M. Kim), NIU’s NICADD-Northern Illinois Center for Accelerator and Detector Development. NIU, 2002-2004.
- Design of Modern Engineering, Integrated Laboratory-Stations (ILS) –NIU-CEET Dean’s Summer grant, Summer 2002.
- “Setting Up New Data Acquisition Hardware And LabVIEW Software For Undergraduate Courses” - Summer 2001.
- Implementation of Accommodative Teaching=Student Success Program, NIU’s Presidential Commission on Persons with Disabilities, Summer 2000 and 2001 implementation.
- “The Interactive Simulation & Experimentation with a LabVIEW Virtual Instrument Including Time Lag, Phase Shift and Aliasing” - “What we get is not what it is - Part II”, Summer 2000
- Creative Problem Solving Methodology and Resources: An interdisciplinary project to promote creativity and information technology, The 2000 Summer Grant for Improvement of Undergraduate Education, NIU CIUE, Provost Office, Summer 1999 and 2000.
- National Collegiate Inventors and Innovators Alliance - NCIIA Annual Conference & In-depth, Hands-On Workshops on Inventions, Innovations and Entrepreneurship in Curriculum, *Washington, D.C., March 11-March 13, 1999. NIU Faculty Development and Instructional Design Center, March 11-March*

13, 1999.

- Development of On-Line (Controlled via Internet) Real Experiments for Undergraduate Lab Courses” The CEET Dean Summer Grant: May 16 - August 14, 1997.
- *Development of On-Line (via Internet) Measurements Using a Research Apparatus*, 1998 Summer Graduate School Fund for Faculty Research and Artistry: May 16 - August 14, 1998.
- Development of Internet-based Engineering Courses, The CEET Dean and Faculty Development Office Summer Grant: May 16 - August 14, 1997
- Interinstitutional Summer Faculty Institute Grant - Internet Course Development, Provost Office: May 16 - August 14, 1997.
- A novel thermal conductivity measurement of fluids with changing and anisotropic structure due to shearing flow, Matching Grant by Graduate School for Research Assistantship. Sept. 1, 1995-August 31, 1996.

Sabbatical Leaves of Absence

Spent Sabbatical 2003 Fall semester as a Guest Scientist in [Fermi National Accelerator Laboratory \(FNAL\)](#), using CFD simulation of the extrusion die flow with an objective to develop more effective die designs as related to collaboration with NIU’s [Northern Illinois Center for Accelerator and Detector Development \(NICADD\)](#).

University service in addition to regular teaching:

Actively serving or have served on the following University, College, and Departmental Committees (last three years specified):

- NIU Presidential Search Advisory Committee (selection of NIU’s 12th President), 2013.
<<http://www.niu.edu/presidentialsearch/psac.shtml> >
- NIU Faculty Senate
- NIU Academic and Standard Committee
- NIU Undergraduate Coordinating Council
- NIU Committee for Improvement of Undergraduate Education
- NIU Faculty Development Advisory Committee
- NIU Continuing Education Advisory Council
- NIU Academic Freedom Committee
- NIU Academic Affairs Committee
- NIU Athletics - Football Recruiting Events Contributor
- Graduate Membership Committee
- Graduate School Faculty Membership Panel
- Graduate School Dean's Designee for Ph.D. thesis defense in Math and Chemistry Departments
- CEET Curriculum Committee
- CEET Computing Committee
- ME Personnel Committee
- ME Curriculum Committee, Chair and Member

- ME Graduate Admission Committee member
- ME Grade Appeal Board
- ME STAC (SAC & TAC) Committee
- ME Seminar Committee/Coordinator
- ME Chair Search and Faculty Search Committees
- Director of Computerized Measurement and Data Acquisition Lab