

CURRICULUM VITAE

Debendra K. Das

PERSONAL DATA: Date of Birth, April 5, 1948; Naturalized US Citizen; E-Mail, dkdas@alaska.edu

EDUCATION: B.S. (with honors) in Mechanical Engineering, Regional Engineering College (Presently National Institute of Technology) Rourkela, Best Graduate, Sambalpur University, India, 1972.
M.S. Mechanical Engineering, Brown University, Rhode Island, 1974.
Ph.D. Mechanical Engineering, University of Rhode Island, 1983.

HONORS AND AWARDS

National merit scholarship of Government of India during the undergraduate years 1968-1972.

Best graduate gold medal recipient in 1972 for graduating with the highest percentage of marks among all branches of engineering (civil, electrical, mechanical, metallurgical and chemical) offered at two engineering colleges under the Sambalpur University System, with an annual graduation of about 500 students.

Sadananda Memorial Award in 1988 for the paper "Design and Economic Evaluation of Solar Water Heating System for Industrial Application in India," awarded by the Institution of Engineers (India), Orissa State Center.

University of Alaska Fairbanks School of Engineering 1990 Merit Award

The Institution of Engineers (India) Orissa State Center's best paper prize in 1992 for the paper entitled "An Experimental Study of Flow Measurements Using a Laser Doppler Velocimeter."

Brundaban Sahu Memorial Award in 1995, jointly with co-author Jeroen Bosse for the paper "Testing Methods and Results for Design Improvements of Outdoor Gas-Fired Heaters," awarded by the Institution of Engineers (India) Orissa State Center.

Nominated by faculty and inducted into the Honor Society of Phi Kappa Phi in April 1996.

Professor of the Year Award from ASME Student Section of Univ. of Alaska Fairbanks, 1996

Included in Who's Who Among America's Teachers, 1998, Education Comm. Assoc., 5th Edition.

Engineer of the Year Award for 2000 and 2008 from the ASME, Alaska Section.

Elected a Fellow of the American Society of Mechanical Engineers in February 2004.

Dr. Carol Feist Outstanding Advisor Award for 2003-04 & 2005-06 at University of Alaska.

ASME Student Section Advisor Award for Region VIII, 2005

ASME Student Section Advisor Award among all Districts of ASME International, 2006

Distinguished Service Award from National Alliance on Mental Illness, Alaska, 2007

Dedicated Service Award from ASME International, 2007

Invited Professor, African University of Science and Technology, Abuja, Nigeria, June 2010, July 2012

Emil Usibelli Distinguished Teaching Award, University of Alaska Fairbanks, 2012

Invited Professor, Sikhsa 'O' Anusandhan University, Odisha, India, October 2016 to February 2017

Distinguished Alumnus Award, National Institute of Technology Rourkela, India, for the year 2017

Utkalmani Gopabandhu Das Memorial Award from Odisha Societeis of Americas for the year 2024

SOCIETY AFFILIATION & PROFESSIONAL REGISTRATION

Member, American Society of Mechanical Engineers from 1974
 Member, Institution of Engineers India (1988-2000)
 Registered Professional Engineer in Rhode Island (1978-1988) and Alaska (1987- 2015)

PROFESSIONAL EXPERIENCE

2018- present Professor Emeritus of Mechanical Engineering, University of Alaska Fairbanks
 1997-1998 & 2006-2007 Chair, Department of Mechanical Engineering, University of Alaska
 1993-2018 Professor of Mechanical Engineering, University of Alaska
 1988-1993 Associate Professor of Mechanical Engineering, University of Alaska.
 1984-1988 Assistant Professor of Mechanical Engineering, University of Alaska.
 1983-1984 Research Engineer, Naval Surface Weapons Center, Dahlgren, VA.
 1979-1983 Mech. Eng. Staff Consult. (half-time); BIF, A Unit of General Signal, RI.
 1980-1983 Instructor (half-time), University of Rhode Island, Kingston, RI.
 1978-1980 Teaching Assistant, University of Rhode Island, Kingston, RI.
 1974-1978 Mechanical Engineer, Tower Iron Works, Inc., Seekonk, MA.
 1972-1974 Research Assistant, Brown University, Providence, RI.

FUNDED RESEARCH

AS THE PRINCIPAL INVESTIGATOR ON THE FOLLOWING PROJECTS

YEAR	TOPIC	AGENCY	AMOUNT
2024 Aug.	Fermilab Travel Grant with Student	Fermi Nat. Accel. Lab	\$4000
2016 June-	Nanofluids in Microchannel	Alaska Space Grant Program	\$30,000
2017 May	Heat Exchanger: Dustin Ray		(with 1:1 salary match)
2015 Fall	Abaqus software leasing for Roy Strandberg	Institute of Northern Engineering	\$1,250
2015 Fall	Tuition assistantship for Jagan Satti	Graduate School	\$1,501
2015 Summer	Research assistantship for Jagan Satti	INE Overhead Acct.	\$2,083
2014	Thermal and Fluid Dyn. Evaluation Grant-In-Aid, Dustin Ray	ASHRAE	\$ 11,500
2012 Spring	Equipment Research Grant	Provost/ UAF	\$14,390
2012 (Jan.-May)	NSF AK EPSCoR Research Fellowship (Dustin Ray)	NSF, Alaska EPSCoR	\$21,500
2011July-2014July	Nanofluids for NASA Applications	NASA	\$879,523 (with UAF salary match)
2011June-Dec.	Nanotechnology Course Development	NASA/EPSCoR/ASGP	\$30,000 (with UAF salary match)

2011 Jan.-May	NSF AK EPSCoR Research Fellowship (R. Vajjha)	NSF, Alaska EPSCoR	\$23,616
2010-2011	Doctoral Research Fellowship Support (R. Vajjha)	Dean, Grad. School Univ. of Alaska	\$27,600
2010-2011	Nanofluids for Applications in NASA Missions	NASA/EPSCoR/ASGP	\$40,000 (with UAF salary match)
2009-10	Doctoral Research Fellowship Support (R. Vajjha)	Dean, Grad. School Univ. of Alaska	\$25,880
2009-10	Research Fellowship Support (R. Strandberg)	Alaska Space Grant Prog.	\$5,000
2009 Summer	Research Assistantship (R. Vajjha)	EPSCoR	\$2,120
2008 Fall	Tuition Assistance (B. Sahoo & R. Vajjha)	Dean, Grad. School	\$3,000
2008 Summer	Research Assistantship (Sahoo & Vajjha)	Office of Electronic Miniaturization	\$3,000
2008 Summer	Tuition Assistance (Sahoo & Vajjha)	Dean, Grad. School	\$4,000
2008 Spr./Sum.	Research Award for MS student (R. Vajjha)	EPSCoR Univ. of Alaska	\$6,243
2008 Spring	Tuition support and Res. Assistantship for MS student (B. Sahoo)	INE Univ. of Alaska	\$9,220
2006-2007	Fellowship for doctoral student support (D. Kulkarni) Nanofluids research	Dean, Grad School, Univ. of Alaska	\$22,464
2006 Summer	Grad Student support (1-Phd, 1-MS) Nanofluids research(Kulkarni, Namburu)	Arctic Region Supercomputing	\$18,000
2005-2006	Fellowship for doctoral student support (D. Kulkarni) Nanofluids research	Dean, Grad School, Univ. of Alaska	\$19,964
2005 Summer	Graduate Student Support Nanofluids research	Arctic Region Supercomputing	\$10,880
2004-2005	Graduate Student Support Chip Scale Thermal Modeling for microelectronics/ Nanofluids(for D. Kulkarni)	Center for Nanosensor Tech. (CNT)/USDOD	\$38,800
2004 Summer	Innovative cooling system with nano- fluids (one month support for D. Das)	Center for Nanosensor Tech. (CNT)/USDOD	\$ 18,500
2004 Summer and Fall	Graduate Student Support Gas Hydrate Modeling (for V. Subbairah.)	Arctic Region Super Computing Center (ARSC)	\$20,000

2003-2004	Graduate Student Support Micro scale Heat Transfer and research on Nanofluids(for D. Kulkarni)	Center for Nanosensor Tech. (CNT)/USDOD	\$38,000
2003-2004	Graduate Student Support Heat and Fluid Flow Modeling of Gas Hydrates (for V. Subbaihaa.)	Arctic Region Super Computing Center (ARSC)	\$36,500
2003	CFD Modeling of Gas Hydrates (summer support for D.Das)	Arctic Region Super Computing Center (ARSC)	\$ 18,500
2002-2003	Graduate Student Support Thermal Management of Micro/Nano chips (for D. Kulkarni)	Center for Nanosensor Tech. (CNT) / USDOD	\$32,500
2003	Thermal research on electronic cooling (summer support for D. Das)	CNT	\$37,000
2001-2002	Graduate Student Support Heat Transfer Effects on GTL Transmission (for S. Nerella)	Petroleum Development Lab/ USDOE	\$15,000
2000-02	ITM Syngas Reactor for Natural Gas Conversion	Air Products & Chemicals, Inc., PA	\$87,800
1997	Lecturing and Research, second year grant	Rotary International, IL	\$5,000
1996	Lecturing and Research in a Developing Country	Rotary International, IL	\$5,000
1995	Design of a Rocket Motor Test Stand	Alaska Space Grant, NASA	\$5,000
1993	Graduate Student Support Modeling of Ice Coring Devices (for S. Hazarika)	Polar Ice Coring Office	\$8,800
1993	Monitoring Heater Testing	Rheem Manufacturing Company, AR	\$3,000
1993	Paper presentation at Fourth International Workshop on Ice Drilling, Tokyo	UAF Faculty Travel Grant	\$700
1992-93	Cold Weather Testing of Outdoor Gas-Fired Heaters	Rheem Manufacturing Company, AR	\$48,900
1992-93	Graduate Student Support, Finite Element Analysis for Thermal Drilling (for S. Hazarika & D. Choi)	Polar Ice Coring Office	\$17,600
1992-93	Curriculum Development in Propulsion Engineering	Alaska Space Grant, NASA	\$5,000

1992	School of Engineering Machine Shop Support, Drill Fabrication.	Polar Ice Coring Office	\$4,000
1991-92	Graduate Student Support, Thermal Modeling of Ice Coring Operation (for S. Jois)	Polar Ice Coring Office	\$17,200
1991	Performance Evaluation of New Air Intake Fixtures on Heaters	Rheem Manufacturing Company, AR	\$39,200
1990	Testing of Heaters to Eliminate Icing Problem	Rheem Manufacturing Company, AR	\$39,700
1989	Moisture Accumulation in Insulated Walls	U.S. Army Cold Region Research & Engin. Lab	\$7,200
1988-89	Graduate Student Support, Gas Hydrate Research (for D. Scott)	Petroleum Development Laboratory/U.S. Department of Energy	\$10,400
1988-89	Tandem Propeller Application for Ships	Marine Highway System, AK	\$22,800
1988	Computation of Fluid Flow and Heat Transfer in VLS	U.S. Navy/SCEEE	\$27,200
1987-88	Halon System Design for Remote Diesel Power Plants	Dept. of Transportation & Public Facilities, AK	\$20,500
1987-88	Graduate Student Support, Fire Protection Research (for V. Srivastava)	Inst. of Northern Eng. & State of Alaska	\$6,000
1986-87	Photovoltaic Systems for Alaska	Dept. of Transportation & Public Facilities, AK	\$12,000
1986-87	Field Study of Bethel Fire Protection System	Dept. of Transportation & Public Facilities, AK	\$30,500
1986	Mini-Grant for the Improvement of Teaching and Research	A.W. Mellon Foundation	\$750
1985-86	Rocket Nozzle Heat Transfer	U.S. Navy/SCEEE	\$5,000
1985-86	Halon Fire Protection System	Dept. of Transportation & Public Facilities, AK	\$30,500

AS CO-PRINCIPAL INVESTIGATOR ON THE FOLLOWING PROJECTS

2017 summer	Undergraduate Research grant, Viscosity measurement & CFD: With Co-PI Jason Slats	Univ. of Alaska Fairbanks	\$5,930
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2016 summer	CFD of nanoscale drug powder flow in blood, With Co-PI Jason Slats	UAF BLaST Program	\$5,000
2008	Bench Scale Test Setup for Fan Coil Testing With Co-PI Roy Strandberg	CCHRC	\$6,100
2007	Construction of a Specific Heat Apparatus With Co-PI Robert Paul Shymanski	EPSCoR, Alaska	\$3,000
2006	Comprehensive Evaluation of Bridge Anti-icing Technologies with J. Zhang	Alaska Dept. of Trans. and Publ. Fac. Anchorage	\$65,000
2006	Preparator of proposal for "Equipment for Thermal Systems Lab for Microelectronic Packaging" with D. Thorsen	Murdock Foundation Total \$425 K with match	\$100,000
2005	Crisis Intervention Training for Young Adults (Students) at NAMI	Eli Lilly Company	\$2,500
2004-05	HVAC Systems for Long Range Radar Stations	Aero-Thermo, Inc US Dept. of Defense	\$25,000
1998-99	Energy Research with Fuel Cell	U.S. Dept. of Energy	\$1 Million
1998-99	Evaluation of Syngas Generators	Air Products, PA	\$37,800
1990	Engineering Development of PICO Ice Test Well Facility	Polar Ice Coring Office	\$7,000
1989-90	Waste Heat Driven Refrigeration Unit for Alaska	Alaska Energy Authority	\$22,400
1987-88	Alaskan Commodities Irradiation Project	U.S. Dept. of Energy	\$450,000

GRADUATE STUDENT SUPERVISION

Name of Student	Masters or Ph.D.	Title of Thesis or Project	Graduation Date
a. Served as Major Advisor			
Vineet Srivastava	Masters	Finite Element Modeling of Hydrate	Summer 1988
David Scott	Masters	Heat Transfer Model in Hydrate	Spring 1990
Surrandar Naganathan	Masters	Turbulent Flow Computation	Summer 1991
Srikanta Jois	Masters	Thermal Modeling of Ice Cores	Summer 1992
Sandeep Hazarika	Masters	Thermal Drill Modeling	Fall 1993
Toshifumo Kono	Masters	Analysis of Boundary Layers	Fall 1994
H. Ed Bargar	Masters	Heat Transfer in Wall Systems	Fall 1995
Bhushan Parikh	Masters	Alternative Fuels for Engines	Spring 1998
Michael Bethune	Masters	Gas Dynamics Computation in VLS	Spring 2000
Harold Ed. Bargar	Ph.D.	Buoyancy Effects in Tall Buildings	Spring 2003

Sirisha Nerella	Masters	Heat Transfer Effect on GTL Transmission	Summer	2002
Devdatta Kulkarni	Masters	Thermal Management of Micro/Nano Chips	Summer	2003
Vijay. Subbaihaa.	Masters	Heat & Fluid Flow Modeling of Gas Hydrate	Fall	2004
Devdatta Kulkarni	Ph.D.	Fluid Flow and Heat Trans.inMicro/Nano Scales,	Summ	2007
Praveen Namburu	MS	Numerical Modeling of Nanofluids	Summer	2007
Brij Mahagaonkar	MS	Thermophysical Properties of nanofluids	Summer	2007
Ravikanth Vajjha	MS	Measurements of Properties & Heat Transfer	Fall	2008
Roy Strandberg	MS	Nanofluids for Building Heating & Cooling	Summer	2009
Bhaskar Sahoo (Co-Chair)	MS	Fluid Dyn. and Thermal Prop. of Nanofluids	Summer	2008
Sravan K. Allam	MS	Application of Nanofluids in Auto. Radiators	Incomplete	
Hanumanth Konakanchi	MS	Electrical Conductivity of Nanofluids	Summer	2010
Dustin Ray	MS	Nanofluids in Plate and compact heat exchangers	Summer	2013
Ravikanth Vajjha	Ph.D.	Rheology and Heat Transfer of Nanofluids	Summer	2014
Jabez Chinnam	MS	Surface Tension and Contact Angle of Nanofluids	Spring	2014
Jagganadha Satti	Ph.D.	Thermophysical Properties and CFD of nanofluids	Summer	2015
Roy Strandberg	Ph.D.	Building heating with nanofluids exper. & numer.	Summer	2018
Dustin Ray	Ph.D.	Nanofluids in microchannel heat exchangers	Summer	2018
Jason Slats	MS	CFD studies of nanoscale drug powder in blood	Summer	2018
Robbin Garber-Slats	MS	Nanofluids in Ground Source Heat Pump in Cold Climate	Summer	2018
Subhabrata Mishra(SOA Univ. India)	Co-Chair, M. Tech	Nanofluids for Cooling in India	Summer	2018

b. Member of Graduate Committee (in addition to above)

James Stevens (MS); ESM	Karen Zhulke (MS); ME
Scott C. Declue (MS); ESM	George Wandover (MS); ME
Min Wan (MS); ME	Meherdad Nadem (MS); Pet E.
Khalid Alsubai (MS); Pet. E.	Paul Richmond (Ph.D.);ME
Pralhad Mutalik (MS); Pet E.	Dan Basketfield (Ph.D); CE
Brendan A. Sandiford (MS); ESM	Dong J. Choi (MS); ME
Mark C. Jordan (MS); CE	Randahl D. Roadifer (MS); Pet. E.
Xiancheng Lu (MS); ME	Lizheng Zhang (MS); ME
Hao Chen (MS); ME	Xiaodong Zhang (MS); ME
Randy Williams (MS); ME	Tapan Dasmohapatra (MS); EQS
Pradeep (MS); ME	Jasper L. Rajesh (MS); ME
Jiang Shao (MS); ME	Pankaj Kumar (MS); ME
Rob Peters (MS); ME	Dana Lowther (MS); ME
Zheng Tu (MS); ME	Rajiv Iyer (MS); ME
Zuh-Yao Lee (MS); ME	Akhilesh Gautam (Ph.D.); SFOS
Victor Mimken (MS); ME	Sara Kralewski (MS); ME
David Wison (Ph.D.); SFOS	Xianggang Zhang (MS); ME
Mathew Wilkinson (MS); ME	Christopher Morgan (MS); ME
Tristan Kenny (MS); ME	Curtis Watters (MS); ME
Sumit Kumar (MS); ME	Srivathsan Ragunathan (MS); ME
Philip Seavers (MS); ME	Venkata Ravi Mudunuri (MS); ME
Steve Meurer (MS);ME	Praveen K. Nindujarla (MS); ME
Xu Jiangfeng (Ph.D.): ME	Preetham Dhoopati (MS); Changed (Aug. '06)
Srivathsan Ragunathan (Ph.D.); ME	Tomas Marsek (Ph. D.); EE
Jagannadh Satti (MS) ME	Vamshi Avadhanula (Ph.D.) ME
O. Paul Babawale (MS)AUST;Pet E.	Jinghui Zheng (MS) Chemistry
Vamsi Mokkaapati (MS); ME	Vamsi Kukkapalli (MS); ME

Aside from these, I have also served as the External Examiner of fourteen Ph.D. and several masters' degree defenses during the past years.

TEACHING EXPERIENCE

Courses Taught: At University of Rhode Island

Undergraduate: Statics
Dynamics
Engineering Graphics
Fluid Mechanics
Advanced Engineering Mathematics
(Engineering Analysis paper II)
Mechanical Engineering Laboratory
Engineering Science Review Course for
Practicing Engineers Preparing for EIT Examination

At University of Alaska

Undergraduate:

ES 111	Engineering Science
ES 201	Computer Techniques
ES 209	Statics
ES 301	Engineering Analysis
ES 341	Fluid Mechanics
ES 346	Basic Thermodynamics
ME 313	Mechanical Engineering Thermodynamics
ME 414	Thermal Systems Design/HVAC
ME 415	Thermal Systems Laboratory
ME 416	Design of Mechanical Equipment for the Petroleum Industry
ME 441	Heat and Mass Transfer
ME 487	Senior Design Project
ME 453	Propulsion Systems
ME 497	Senior Level Independent Study Courses, e.g. (i) Parachute Design for Small Rockets, (ii) Instrumentation for Remote Sensing of Weather Data. And on similar specialized subjects.

Graduate:

ME 641	Advanced Fluid Mechanics
ME 642	Advanced Heat Transfer
ME 493/693 (stacked)	Nanofluids
ME 443/643 (stacked)	Fluid Dynamics and Heat Transfer Characteristics of Nanofluids
ME 697	Graduate Level Independent Study Courses (i)Micro and Nanoscale Heat Transfer, (ii)Thermal Properties of Nanofluids (iii) Flow of nanofluids in microchannel (iv) Application of nanofluids in Rankine cycle heat recovery devices. And on similar specialized subjects.

Other Teaching Activity:

Gave E.I.T. and FE review lectures on Thermodynamics and Statics for many semesters.
Gave P.E. exam review lecture on Compressible Flow.
Gave mechanical engineering introductory lecture and lab coverage for ES 101 several semesters.

As a certified teacher by the National Alliance on Mental Illness, I taught the 12-week NAMI signature program class, Family-to-Family in Spr./Sum—2008, with another instructor.

DEVELOPMENT OF NEW COURSES, SYLLABI, AND LABS

- (i) Developed two new graduate courses in 1985, ME 641 (Advanced Fluid Mechanics) and ME 642 (Advanced Heat Transfer) and have taught them several times since then.
- (ii) Introduced new equipment (procured earlier by Professor Johnson) to Boiling Heat Transfer experiment for the lab course ME 415 in the Fall of 1985.

- (iii) Researched literature to select various components of a Laser Doppler Velocimeter and contacted several manufacturers to procure them at minimum cost. The experiment was set up for flow measurements in ME 415 lab. The first group of students conducted experiments on this apparatus in the Fall semester of 1988.
- (iv) Prepared a Thermal Systems Laboratory Manual for ME 415 during the summer of 1992 by consolidating and organizing individual lab handouts. The manual was introduced into the class in the Fall of 1992.
- (v) Prepared the syllabus for a new course ME 453 (Propulsion Systems) for the proposed aerospace option within our Mechanical Engineering curriculum in 1993. It was reviewed and approved by the SOE Curriculum Council and the Senate Curriculum Subcommittee. I taught this course for the first time in Spring 1994.
- (vi) Attended two workshops in Spring 1991 to learn UAF requirements for oral intensive and writing intensive ("O" and "W" designations) courses in the new curriculum. Then rewrote the syllabus of ME 487, Design Project, to incorporate these requirements and submit it for approval to the Curriculum Council and the Senate Core Review Committee in the Fall of 1991. Made further revisions to the syllabus to comply with comments of the Senate Core Review Committee in March 1992. This syllabus was finally approved in the Spring 1992 as one that fulfills the upper-division writing-intensive (W) and upper-division oral communication-intensive (O) requirements for a Baccalaureate degree in Mechanical Engineering.
- (vii) In Spring 2006 introduced a new lab, "Free and Forced Convection Heat Transfer," in the course Thermal Systems Laboratories, ME 415.

PUBLICATIONS:

Books

Strandberg, Roy., Ray, Dustin and Das, Debendra, Nanofluids in Heat Exchangers: Experimental and Computational Research, LAP Lambert Academic Publishing, 2024, ISBN: 978-620-7- 84139-4, UK/Moldova, 129 pp.

Mishra, Subhabrata, Samantaray, Sikata and Das, Debendra, Nanofluids Application in Heat Pump; Design and Performance Analysis, LAP Lambert Academic Publishing, 2024, ISBN: 978-620-7- 64710-1, UK/Moldova, 129 pp.

Mokkapati, V.K.S., Lin, C-S., and Das, D. K., Heat Recovery by Corrugated Tube and Twisted Tape Insert Exchanger: Numerical Simulation and Test, LAP Lambert Academic Publishing, 2023, ISBN: 978-620-6-77983-4, 57 pp.

Sahoo, B. and Das, D. K., Transport Properties and Freeze-Thaw Characteristics of Nanofluids: Measurement of Properties and Computational Modeling of Freeze-Thaw, LAP Lambert Academic Publishing, 2020, ISBN: 978-620-2-68274-9, 74 pp.

Satti, J. and Das, D. K., New Equations for Nanofluids Properties and Application to Heat Pumps: Experimental and Computational Studies, LAP Lambert Academic Publishing, 2020, ISBN: 978-620-2-67711-0, 211 pp.

Vajjha, R.S. and Das, D. K., Rheology and CFD Studies of Nanofluids, Thermophysical Properties and Correlations, LAP Lambert Academic Publishing, 2016, ISBN: 978-3-659-92759-1, 245 pp.

Ray, D. R. and Das, D. K., Performance of Nanofluids in Minichannel Heat Exchangers, Experimental and Computational Evaluations of Nanofluids, LAP Lambert Academic Publishing, 2016, ISBN: 978-3-659-93976-1, 100 pp.

Das, D. and Kulkarni, D., Nanofluids Properties and Their Applications, Experimental and Theoretical Studies, LAP Lambert Academic Publishing, 2012, ISBN: 978-3-659-16609-9, 175 pp.

Strandberg, R.T. and Das, D. K., Heat Transfer Performance of Nanofluids, Applications in Facility Heating, LAP Lambert Academic Publishing, 2010, ISBN:978-3-8383-9842-6, 136 pp.

Vajjha, R.S. and Das, D. K., Measurements of Nanofluids Properties and Heat Transfer Computation, LAP Lambert Academic Publishing, 2010, ISBN: 978-3-8383-7214-3, 114 pp.

Journals and Refereed Proceedings:

Mungas, G. S., Das, D.K., Ray, D., Johansen, E., Bauman, K., Dzioba, R., 2024, "H₂O Sublimation Extraction for Mars and Lunar ISRU," Space Resource Round Table XXIV Meeting Presentations, Colorado School of Mines, Colorado, USA, 2 pp.

Strandberg, R., Ray, D., Das, D.K., 2024, "Experimental Characterization of Hydronic Air Coil Performance with Aluminum Oxide Nanofluids of Three Concentrations." Appl. Nano, 5, 84-107.

Ray, D. R., and Das, D. K., 2023, "Simulations of Flows via CFD in Microchannels for Characterizing Entrance Region and Developing New Correlations for Hydrodynamic Entrance Length," Micromachines, 14, 1418 pp.1-27.

Mishra, D. K., Balabantaray, B. K., and Das, D., 2023," Challenges and Future Prospects of Nanotechnology-enabled Quantum Communication for Objective Teleportation: A Systematic Review." China Petroleum Processing and Petrochemical Technology, Vol. 23, Issue 2, pp. 2678-2700.

Ray, D. R., and Das, D. K., 2020, "Numerical Investigation to Derive Correlations for Hydrodynamic Entrance Length in Very Low Reynolds Number Regime in Rectangular Microchannels," ASME Journal of Fluids Engineering, Vol. 142, pp. 094504-1 thru 5.

Ray, D., Strandberg, R., and Das, D., 2020, "Thermal and Fluid Dynamic Performance Comparison of Three Nanofluids in Microchannels Using Analytical and Computational Models," Processes, 8, 754, pp.1-19..

Strandberg, R., Ray, D., and Das, D. K., 2020, "Microchannel Cooling Performance Evaluation of Al₂O₃, SiO₂ and CuO Nanofluids Using CFD," Heat and Mass Transfer Research Journal, 4(1), pp.1-24.

R G Slaght, S Mishra & D. K. Das, 2019, "Experimental and Numerical Results on the performance of a Heat Pump," International Journal of Engineering and Advance Technology (IJEAT), Vol. 9, Issue 1, pp.7289-7299.

S Mishra, S Samantaray & D. K. Das, 2018, "Theoretical Analysis on Application of Nanofluids in Ground Source Heat Pumps for Building Cooling," International Journal on Recent Technologies in Mechanical and Electrical Engineering (IJRMEE), Vol. 5, Issue 6, pp. 28-37.

Strandberg, R.T. and Das, D. K., 2018 "Experimental Investigation of Hydronic Air Coil Performance with Nanofluids," International Journal of Heat and Mass Transfer, Vol. 124, pp. 20-35.

Sahoo, B.C., Ray, D.R. and Das, D. K., 2018 "Freeze-Thaw Characteristics of Water-Based Copper Oxide Nanofluid," Advances in Materials Science and Engineering Vol. 2 [Issue 1], pp. 1-8.

Satti, J. R., Das, D. K. and Ray, D. R., 2017 "Investigation of the Thermal Conductivity of Propylene Glycol Nanofluids and Comparison with Correlations," International Journal of Heat and Mass Transfer, Vol. 107, pp. 871-881.

Satti, J. R., Das, D. K. and Ray, D. R., 2016, "Measurements of Densities of Propylene Glycol-Based

- Nanofluids and Comparison with Theory," ASME Journal of Thermal Science and Engineering Applications, Vol. 8, pp.021021-1 thru 11.
- Satti, J., Das, D.K., Ray, D., 2016, "Specific Heat Measurements of Five Different Propylene Glycol Based Nanofluids and Development of a New Correlation," International Journal of Heat and Mass Transfer, Vol. 94, pp. 343-353.
- Chinnam, J., Das, D.K., Vajjha, R.S., Satti, J., 2015, "Measurements of the Surface Tension of Nanofluids and Development of a New Correlation," International Journal of Thermal Sciences, Vol. 98, pp. 68-80.
- Chinnam, J., Das, D.K., Vajjha, R.S., Satti, J., 2015, "Measurements of the Contact Angle of Nanofluids and Development of a New Correlation," International Communications in Heat and Mass Transfer, Vol. 62, pp. 1-12.
- Vajjha, R.S., Das, D.K. and Chukwu, G. A., 2015, "An Experimental Determination of the Viscosity of Propylene Glycol/Water Based Nanofluids and Development of New Correlations" ASME J. of Fluids Engineering, Vol. 137, pp. 081201-1 thru 15.
- Vajjha, R.S., and Das, D.K., Ray, D.R., 2015, "Development of New Correlations for Heat Transfer and Friction Factor Under Turbulent Flow of Nanofluids in Flat Tubes," International Journal of Heat and Mass Transfer, Vol. 80, pp. 353-367.
- Das, D.K., Vajjha, R.S. and Rout, A. K., 2014, "A Computational Study of Nanofluids Performance in Automobile Radiators," Proceedings: 3rd KIIT International Symposium on Advances in Automotive Technology, Bhubaneswar, India, pp 1-13.
- Das, D.K. and Ray, D. R., 2014, "Enhancement of Heat Transfer Performance Using Nanofluids," Proceedings: The Institution of Engineers (India), All India Seminar on Recent Advances in Thermal Engineering, Odisha State Center, 13 pp.
- Ray, D. R., and Das, D. K., 2014, "Superior Performance of Nanofluids in an Automotive Radiator," ASME Journal of Thermal Science and Engineering Applications, Vol. 6(4), p. 041002-1 thru 16.
- Zheng, J., Schnurr, T., Dunlap, K., Das, D., and Duffy, L., 2014, "Effect of Zinc Oxide Nanoparticles on Neuroblastoma SH-SY5Y Cells," American Journal of Biochemistry and Biotechnology, Vol. 10 (2), pp. 116-124.
- Ray, D. R., Das, D. K., and Vajjha, R. S., 2014, "Experimental and Numerical Investigations of Nanofluids Performance in a Compact Minichannel Plate Heat Exchanger," International Journal of Heat and Mass Transfer, 71, pp. 732-746.
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TECHNICAL REPORTS

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- Shymanski, R. P. and Das, D.K., 2008, "Design, Construction and Testing of an Apparatus for Measuring the Specific Heat of Nanofluids," Project Report Submitted to Alaska EPSCoR, funded by NSF in fulfillment of the undergraduate research grant of spring 2008, 8 pp.

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- Nerella, S. and Das, D.K., 2002, "Thermal Effect Consideration in Transportation of GTL," Tech. Report to Petroleum Development Lab for USDOE Project, 152 pp.
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- Das, D.K., 1983, "Flow and Dynamic Torque Calculations of Butterfly Valve," Rept. No. DT-82459 for BIF-General Signal and Bechtel-Korea Nuclear Units 7 and 8, 31 pp.
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- Das, D.K., and Amaral, A., Ricapito, R., 1981, "Revised Seismic Analysis of Butterfly Valves for Maximum "G" Level with Electric Operators (Vol. i) and Pneumatic Cylinder Operators (Vol. 2)," Rept. Nos. N79972-DES-81-2 & 3 for BIF-General Signal and Bechtel Power Corp., Vol. 1, 138 pp. and Vol. 2, 100 pp.
- Das, D.K., Amaral, A.M., and Hart, F.E., 1981, "Seismic Analysis, ASME Section III Butterfly Valves," Rept. No. N64109-DES-81-4 for BIF-General Signal and Duke Power Co., Perkins and Cherokee Stations, 33 pp.
- Das, D.K., and Hart, F.E., 1981, "Seismic Analysis of Butterfly Valve with PMH Actuator for Public Service Electric and Gas Company, Hope Creek Generating Station, Units 1 and 2," Rept. No. N50934-1 for BIF-General Signal, 36 pp.
- Das, D.K., 1980, "Study of the Proposed Capacity Increase of Boiler No. 1 of the Acid Plant," Report for Tecmar, Inc. and Gardinier, Inc., Florida, 13 pp.
- Das, D.K., Gominho, L., 1980, "Seismic Analysis of Butterfly Valve with Matryx Pneumatic Operator," Rept. No. DES-80-5 for BIF-General Signal and AECV Ontario Hydro. Project, 34 pp.
- Das, D.K., 1980, "Seismic Analysis of Butterfly Valve for UNC Nuclear Industries, Inc.," Repts. No. 73826-U-1 & II for BIF-General Signal, each 25 pp.
- Das, D.K., Gominho, L., 1980, "Stress Analysis of the Tie Rod Mounting Geometry," Rept. No. DES-HS-2 for Hamilton & Son, Inc., 36 pp.
- Das, D.K., 1980, "Seismic Analysis of Butterfly Valve for Catawba Nuclear Station Units 1 and 2," Rept. No. N72343 for BIF-General Signal and Duke Power Company, 22 pp.
- Das, D.K., and Gominho, L., 1980 "ASME Code Section III, Class-i Design Calculation for 6-inch Venturi Meter," Rept. No. DES-80-1 for BIF-General Signal, 8 pp.
- Das, D.K., 1980, "Ontario Hydro Project-Live Loading Calculation for Disc Spring Design," Rept. for BIF-General Signal and Atomic Energy of Canada, Ltd., 11 pp.
- Das, D.K., and Gominho, L., 1980, "Stress Analysis of Charcoal Adsorber Vessels AI and BI for Limerick Project," Rept. No. DES-80-3 for Technifab, a division of Nelmore Co., Inc., 34 pp.
- Das, D.K., and Gominho, L., 1980 "Seismic Analysis of Butterfly Valve with ITT Hydramotor Operator," Rept. No. DES-80-2 for BIF-General Signal and Burns and Roe, Inc., 25 pp.
- Das, D.K., and Ricapito, R., 1980, "(HVAC) Butterfly Valves (for air service), Nuclear Safety Class 2, Seismic Analysis of Butterfly Valves," Rept. No. BIF-CPL-NY435211, Part:C, for BIF-General Signal and Ebasco/Carolina Power and Light Company, 93 pp.
- Das, D.K., and Cunningham, J.P., 1979, "Seismic Analysis of Butterfly Valve with Limitorque Electric and Manual Operator," Repts. No. N67923 & 67930 for BIF-General Signal and Ebasco/Carolina Power and Light Co., 32 pp & 29 pp.
- Das, D.K., 1974, "Estimation of Radiative Heat Transfer from Flame Spreading on a Horizontal Fuel Surface," Master's Thesis, Brown University, RI, 62 pp.

PROFESSIONAL ACTIVITIES

PRESENTATIONS AT CONFERENCES:

A Computational Study of Nanofluids Performance in Automobile Radiators, Keynote Address at 3rd KIIT International Symposium on Advances in Automotive Technology, KIIT University, December 26, 2014, Bhubaneswar, India.

Enhancement of Heat Transfer Performance Using Nanofluids, Keynote Address at All India Seminar on Recent Advances in Thermal Engineering, The Institution of Engineers (India), Odisha State Center, January 11, 2014, Bhubaneswar, India.

Fuel Cells Research for Efficient Energy Utilization, Keynote Address at International Seminar on Recent Trends in Renewable Energy, Siksha 'O' Anusandhan University, January 13, 2014, Bhubaneswar, India.

Application of Nanotechnology to Enhance the Thermal Performance of Automotive Radiators, 100th Indian Science Congress, Jan. 2-6, 2013, Kolkata, India.

Computational Study of Nanofluids in a Heat Exchanger Proving Their Thermal Energy Efficiency, 99th Indian Science Congress, Jan 3-7, 2012, Bhubaneswar, India

Comparison of Surface Area and Pumping Power Requirements in Heat Exchangers Using Nanofluids and Base Fluids Suitable for NASA Applications. Aug. 16, 2011, Thermal and Fluids Analysis Workshop, NASA Langley Research Center, Langley, VA.

Viscosity Measurements of Nanofluids Suitable for NASA Applications, May 2011, Alaska Space Grant and NASA EPSCoR Symposium, Anchorage, AK.

Enhancement of the Performance of Thermal Control Systems Using Nanofluids. Aug. 17, 2010, Thermal and Fluids Analysis Workshop, NASA Johnson Space Center, Houston, TX.

Evaluation of the Performance of Nanofluids as Automobile Engine Coolants. September 16, American Association for the Advancement of Science, 2008 Arctic Science Conference, Fairbanks, Alaska.

Specific Heat Measurement of Different Nanofluids and Their Influence on Heat Transfer. Presented on Jan. 20, 2008 as the Chief Speaker for 7th Professor Bhubaneswar Behera Memorial Lecture at the 49th Technical Annual Session of the Institution of Engineers at Bhubaneswar, India.

Recovery of Natural Gas from Hydrates Via a Thermal Stimulation Technique, September 16, 2004, International Conference on the Arctic and North Pacific: Bridges of Science Between North America and the Russian Far East: Past, Present and Future, Vladivostok, Russia

A Transient Heat Transfer Analysis of Natural Gas Hydrate Reservoir, June 2004, 38th Heat Transfer and Fluid Mechanics Institute, Sacramento, CA.

Heat Transfer Effects on the Transmission of Gas-to-Liquids Products, January 2002, The Institution of Engineers 43rd Annual Conference, Bhubaneswar, India.

Natural Gas Fueled Automobile Engines for Reducing Pollution, September 2000, 51st Arctic Science Conference, Whitehorse, Canada.

Comparison of Two Integral Methods to Calculate Attached and Separated Turbulent Boundary Layers, May 2000, 14th Engineering Mechanics Conference, Austin, TX.

Fuel Cells for Clean Power Production in the Arctic Regions, September 1999, 50th Arctic Science Conference,

Denali Park, AK.

UAF Energy Center Design, August 1999. Conference on Renewable Energy, University of Alaska, Fairbanks.

An Entrainment Approach for Turbulent Boundary Layer Calculation, June 1999. 36th Heat Transfer and Fluid Mechanics Institute, Sacramento, CA.

An Accurate Method for Turbulent Boundary Layer Computation, June 1998, 12th Engineering Mechanics Conference, San Diego, CA.

A Data Acquisition System for a Fuel Cell, December 1998, International Conference on Information Technology, Bhubaneswar, India.

Fuel Cell Research in Alaska, August 1997, Arctic Science Education Conference, Barrow, AK.

Calculation and Measurement of Solar Energy at an Alaskan Site, May 1997, International Symposium on Cold Regions Development, Anchorage, AK.

Design of a Test Cell for Static Tests of Rocket Motors, September 1996, 47th Arctic Science Conference, Girdwood, AK.

Application of Magnetic Flow Meters in Measuring Condensate Flow Rate for District Heating, September 1995, 46th Arctic Science Conference, Fairbanks, AK.

A Thermo-Photovoltaic Generator for Production of Heat and Electricity, September 1995, 46th Arctic Science Conference, Fairbanks, AK.

Experimental Studies on Outdoor Gas-Fired Heaters to Improve Their Performance Under Cold Weather Conditions, December 1994, Renewable Energy Sources and Conservation Conference, RENCON-94, Indian Institute of Technology, Bombay, India.

Theoretical Studies and Tests on a Thermo-Mechanical Ice Coring Drill, September 1993, 44th Arctic Science Conference, Arctic Division of the American Association for the Advancement of Science, Whitehorse, Yukon.

Cold Weather Engineering Problems and Solutions for Outdoor Gas-fired Heaters, September 1993, 44th Arctic Science Conference, Arctic Division of the American Association for the Advancement of Science, Whitehorse, Yukon.

Thermal Modeling of Boreholes and Ice Cores via Finite Element Technique, April 1993, Fourth International Workshop on Ice Drilling Technology, National Institute of Polar Research, Tokyo, Japan.

Progress on Thermo-Mechanical Drills at the Polar Ice Coring Office, September 1992, 43rd Arctic Science Conference, Arctic Division of the American Association for the Advancement of Science, Valdez, Alaska.

Application of a Finite Element Model to Hydrate Reservoirs, June 1991, Third International Symposium on Cold Regions Heat Transfer, Fairbanks, Alaska.

Application of Photovoltaic Systems in Interior Alaska, May 1991, 42nd Arctic Science Conference, Arctic Division of the American Association for the Advancement of Science, Fairbanks, Alaska.

Analytical Model for Determining Ice Core Temperatures, May 1991, 21st Arctic Workshop, Arctic Division of the American Association for the Advancement of Science, Fairbanks, Alaska.

Design Improvement of Alaska Marine Highway Vessels, May 1990, Alaska Transportation Forum, Fairbanks, Alaska.

Design of Halon Fire Protection Systems for Buildings in Rural Alaska, September 1989, 40th Arctic Science Conference, Arctic Division of the American Association for the Advancement of Science, Fairbanks, Alaska.

The Movement of Oil Slicks on the Open Ocean, September 1989, 40th Arctic Science Conference, Arctic Division of the American Association for the Advancement of Science, Fairbanks, Alaska.

A Finite Element Model for Gas Hydrate Dissociation, June 1989, Symposium on Flow in Porous Media/Reservoir Modeling, American Chemical Society Conference, Cleveland, Ohio.

Design of a Halon Fire Protection System for Computing and Electronic Data Processing Facilities in India, January 1989, Thirtieth Annual Session, Institution of Engineers-India, Orissa.

Design and Economic Evaluation of a Solar Water Heating System for Industrial Applications in India, January 1988, Twenty-ninth Annual Session, Institution of Engineers-India, Orissa.

A Numerical Study of Two-Phase Flow and Heat Transfer in a Nozzle, August 1987, Joint ASME, AIChE and ANS 24th National Heat Transfer Conference, Pittsburgh, Pennsylvania.

A Numerical Study of Turbulent Separated Flows, June 1987, ASME Applied Mechanics, Bioengineering, and Fluids Engineering Conference, Cincinnati, Ohio.

An Integral Method for Calculating Turbulent Skin Friction in Two-Dimensional Incompressible Separated Flows, May, 1986, AIAA/ASME 4th Joint Fluid Mechanics, Plasma Dynamics and Lasers Conference, Atlanta, Georgia.

Application of Pressure Gradient-Wake Correlations to Inner Variable Theory for Turbulent Boundary Layer Calculations, April 1986, Southeastern Conference on Theoretical and Applied Mechanics, Columbia, South Carolina.

PRESENTATIONS AT SEMINARS:

Rotating and Static Equipment for Oil and Gas Industries: Presented at Professional Development Seminar Organized by Toncia Energy Consulting at United Arab Emirates, Dubai, August 12-14, 2014.

NASA JSC and Space Grant Alignment Opportunities: NASA's Thermal Control Systems using Nanofluids Research at Johnson Space Center, Houston, Texas, July 29-30, 2014.

Impact of Climate Change on Permafrost, Thermal Energy Efficiency, Stirling Engine, Aerospace Materials: Presented at the Summer Academic Camp on Climate Change Science at Ilisagvik College, Barrow, Alaska, August 3, 2013.

I presented the following seminars at universities, research laboratories, and industries during my visit to India during the Christmas break of 2011/2012.

- Dec. 28-30, 2011 Seminar presentation on ASME's approach to engineering project management at Dhaneswar Rath Institute of Engineering & Management Studies, India
- Jan. 2-4, 2012 Seminar presentation on Nanofluids research at Eastern Academy of Science & Technology (EAST), India
- Jan. 9-11, 2012 Seminar presentation on Nanofluids research at Veer Surendra Sai University of Technology, India
- Jan. 12-13, 2012 Seminar presentation on ASME's approach to engineering project

- management at Bhavan's Center for Communication and Management, India
- Jan. 16-17, 2012 Seminar presentation on ASME's approach to engineering project management at Rourkela School of Management and Information Science, India
- Jan. 16-18, 2012 Seminar presentation Nanofluids research at Padmanava College of Engineering, India

I presented ten seminars at universities, research laboratories and industries over a period of ten weeks during my sabbatical leave in India in the Fall semester of 2009. Ten letters of acknowledgement from these organizations were presented to CEM for the purpose of documentation for travel cost reimbursement. The technical seminars covered different aspects of fluid dynamic and heat transfer characteristics of nanofluids.

1. Technical Seminar: Nov. 18, 2009, Indian Institute of Technology. Bhubaneswar
2. Technical Seminar: Nov. 20, 2009, National Aluminum Company of India, Angul
3. Technical Seminar: Nov. 23, 2009, Institution of Technical Education and Research
4. IEEE Seminar: Nov. 25, 2009, Silicon Institute of Technology, Bhubaneswar
5. Engineering Management Seminar: Jan. 5, 2010, The Institution of Engineers (India)
6. Technical Seminar: Jan. 9, 2010, Synergy Inst. of Eng. and Technology, Dhenkanal
7. Technical Seminar: Jan. 12, 2010, Steel Authority of India Plant, Rourkela
8. Technical Seminar: Jan. 13, 2010, Padmanava College of Engineering, Rourkela
9. Technical Seminar: Jan. 14, 2010, VSS University of Technology, Burla
10. National Seminar: Jan. 15, 2010, Energy and Environmental Impacts Related to Sustainability at Institute of Technical Education and Research, Bhubaneswar

Collaboration for Energy and Environmental Technologies Between the Canadian and American Arctic Regions. Presented at the Sixth Annual Canada Days Conference, Feb. 27, 2009 at the University of Alaska Fairbanks.

I presented eleven seminars during my visit to India between Dec. 16, 2006 and Jan. 12, 2007 on two topics.

- (1) Technical seminar entitled "Experimental and Numerical Study on Convective Heat Transfer and Fluid Dynamic Characteristics of Nanofluids."
- (2) Education seminar entitled "Graduate Education System in the USA with Examples from the University of Alaska"

The seminars and the institutes where they were presented have been listed below.

1. Technical Seminar: Dec. 20, 2006, Indian Institute of Technology Delhi
2. Technical Seminar: Dec. 26, 2006, Regional Research Laboratory, Bhubaneswar
3. Education Seminar: Dec. 27, 2006, DRIEMS Inst. Engineering Dept., Tangi
4. Technical Seminar: Jan. 1, 2007, National Aluminum Company of India, Koraput
5. Technical Seminar: Jan. 1, 2007, Hindustan Aeronautics Ltd., Koraput
6. Education Seminar: Jan. 2, 2007, Samanta Chandrasekhar Inst. of Tech., Koraput
7. Technical Seminar: Jan. 4, 2007, National Institute of Technology, Rourkela
8. Technical Seminar: Jan. 5, 2007, Institution of Engineers India, Rourkela Section
9. Education Seminar: Jan. 6, 2007, Padmanava College of Engineering, Rourkela
10. Education Seminar: Jan. 6, 2007, RIMS Information Science Dept., Rourkela
11. Technical Seminar: Jan. 6, 2007, Padmanava College of Engineering, Rourkela

A Study on Nanofluids for Their Convective Heat Transfer and Hydrodynamic Characteristics, Presented on Jan. 11, 2006 at National Institute of Technology, Rourkela, India. Presented also on Jan. 7, 2006 at National Aluminum Company, Damanjodi, India

Thermal Design of a Heat Sink for a Micro Scale Electronic Processor Chip, Presented on Jan. 9, 2004 at Indian Institute of Technology, New Delhi, India. Presented also on Jan. 7, 2004 at Regional Research Laboratory, Bhubaneswar, India.

Cold Region Heat Transfer Studies for Gas-to-Liquids Plants, Presented on Aug. 7, 2002 at Air Products and Chemicals, Inc., Allentown, PA

Heat Transfer Models for Designing Cooling Systems for Electronic Chips: Center for Nanosensor Technology Seminar Series, November 21, 2002, University of Alaska Fairbanks.

Fuel Cell Studies at UAF Energy Center for Clean Power for Rural Alaska, Presented on Feb. 14, 2002 at Indian Institute of Technology, Kanpur.

Thermal Studies on Transportation of Gas-to-Liquids Products through a Pipeline in Arctic Climate, Presented on Jan. 23, 2002 at Regional Research Laboratory, Bhubaneswar, India.

Information Gathered from the IEEE – NANO 2001 Conference, CNT Seminar Series, Nov. 15, 2001 at University of Alaska Fairbanks.

Coronary Artery Disease and Heart Bypass Surgery - - How to Avoid Them; Presented on June 30, 2001 at OSA Annual Convention in Chicago, Illinois. Also presented at the Monthly Seminar of Mechanical Engineering Dept., University of Alaska Fairbanks in Oct. 2001.

How to Obtain an MS Degree in Mechanical Engineering at University of Alaska Fairbanks on a Part-time Basis While Working in Industry on April 24, 2001 at Northern Alaska ASME Group meeting in Fairbanks

Research on Fuel Cells as a Clean Source of Power, August 5, 2000 at The Institution of Engineers-India, Bhubaneswar. And also on August 16, 2000 at Indian Institute of Technology, Energy Systems Engineering Seminar, Bombay.

Heating, Ventilating and Air-Conditioning Systems Design for a Fuel Cell Test Laboratory, Apr. 22, 1999, University of Alaska, Fairbanks Mechanical Engineering Department Seminar.

Energy Test Center for Fuel Cell Research at Univ. of Alaska, June 12, 1998, Russian American Fuel Cell Consortium at Sandia National Lab, Albuquerque.

Creation of a Test Facility at Poker Flat Research Range for Static Test Firing of Rocket Motors, Naval Surface Warfare Center, August 3, 1995 at Indian Head, Maryland.

A series of topics: oceanographic vessel propulsion, stream gauging, foundations on permafrost, presented at a one-week seminar for Alaska native undergraduate student interns at the Kasitsna Bay Marine Lab, June 19-23, 1995, Alaska.

Modern Developments in Ship Propulsion, Course MSL 625 Shipboard Techniques, Oceanographic Research Cruise on R/V Alpha Helix for Graduate Program in Marine Science, May 10, 1995, Seward, Alaska.

A Procedure for Conducting Field Tests on Industrial Heaters to Evaluate and Enhance Their Thermal Performance, Mechanical Engineering Department Seminar, Dec. 28, 1994, Orissa University of Agriculture and Technology, India.

Instrumentation, Measurements and Data Acquisition Techniques for the Field Testing of Large Scale Industrial Heaters to Improve Their Performance, Dec. 5, 1994, Indian Institute of Technology, Kharagpur.

Cold Weather Testing of Outdoor Gas-fired Heaters, Oct. 20, 1994, Mechanical Engineering and Applied Mechanics Dept. Seminar, University of Rhode Island. Oct. 24, 1994, Fluid Mechanics, Thermal and Chemical Processes Group Seminar, Brown University.

Testing of three Outdoor Heaters during the winter of 1993-1994, Aug. 31, 1994, Rheem Manufacturing Company, Ft. Smith, Arkansas.

Performance of Fix Kits to Eliminate Icing Problems on Large-scale Gas-fired Heaters, June 21, 1993, Rheem Manufacturing Co., Fort Smith, Arkansas.

Cold Weather Testing of Rheem Gas-Fired Outdoor Heaters, June 5, 1992, Rheem Manufacturing Company, Ft. Smith, Arkansas.

A Finite Element Method for Modeling Heat Transfer During Ice Goring Operations, April 10, 1992, Polar Ice Goring Office seminar, Fairbanks.

An Experimental Study of Flow Measurements Using a Laser Doppler Velocimeter, December 26, 1991, Institution of Engineers (India), Orissa State Center.

Description of Irradiation Facilities, January 20, 1988, Project Staff and State Advisory Panel meeting, Anchorage.

Electron Beam Machines for Irradiation of Alaskan Commodities, April 26, 1988, Project Staff and State Advisory Panel meeting, UA Southeast, Juneau.

Irradiation Technology, Ionizing Energy and Facility Design, October 19, 1988, Project Staff and State Advisory Panel meeting, Anchorage.

Finite Element Computation of Fluid Flow and Heat Transfer Applicable to Vertical Launching Systems & Missile Rail Heating, presented at the Naval Surface Weapons Center, Ship Engineering Branch, Dahlgren, Virginia, April 18, 1986.

Turbulent Boundary Layer Calculation for Flow in the Vertical Launching System, presented at the Naval Surface Weapons Center, Ship Engineering Branch, Dahlgren, Virginia, May 14, 1986.

Calculation of Aerodynamic Heating on Missile Surface, presented at the Naval Surface Weapons Center, Aeromechanics Branch, Dahlgren, Virginia, May 1984.

OLDER PRESENTATIONS HAVE BEEN OMITTED

OTHER PROFESSIONAL ACTIVITIES

Academic Training Mentor for summer studies of Brazilian Engineering senior Michel Siqueira at our university to fulfill Brazil Scientific Mobility Program, May-August 2015.

External Examiner of a Ph.D. Thesis from Malaviya National Institute Technology, Jaipur, Rajasthan, India in Mechanical Engineering, November 2010.

External Examiner of a Ph.D. Thesis from Birla Institute of Technology, Mesra, Bihar, India in Material Science and Engineering, India, August 2006.

Outside Reviewer of a file for evaluation towards the promotion to full professorship of a candidate in Mechanical Engineering at Montana State University, November, 2000.

Editorial work

Reviewer of two \$1M proposals for Qatar National Research Fund under their National Priorities Research program in March 2015.

Reviewer of two \$1M proposals for Qatar National Research Fund under their National Priorities Research program in March 2014.

Reviewed a paper for Petroleum Science and Technology journal, September 2013

Reviewed a paper for International Journal of Heat and Mass Transfer, July 2013

Reviewed two proposals each worth slightly more than \$1M for Qatar National Research Fund under their National Priorities Research program in March 2013

Reviewed a paper for Applied Thermal Engineering, May 2012

Reviewed two proposals each worth slightly more than \$1M for Qatar National Research Fund under their National Priorities Research program in March 2012

Reviewed a paper for International Journal of Thermal Science, January 2011

Reviewed one proposal worth slightly more than \$1M for Qatar National Research Fund under their National Priorities Research program in March 2011

Reviewed a paper for International Journal of Heat and Mass Transfer, December 2010

Reviewed a paper for International Journal of Vehicle System Modeling and Testing, December 2010

Reviewed five proposals for Alaska NASA EPSCoR research initiation grant, Nov. 2010

Reviewed a paper for ASME Journal of Heat Transfer, Nov. 2010

Reviewed a proposal for Rutgers, The State University of New Jersey on Energy Technology Grant, Sept. 2010

Reviewed two proposals each worth slightly more than \$1M for Qatar National Research Fund under their National Priorities Research program in March 2010. (1) Computation of flow around nanoparticles and (2) Energy production from geothermal heat of oil wells.

Reviewed two proposals each worth slightly more than \$1M for Qatar National Research Fund under their National Priorities Research program in Feb. 2009. (1) Acid gas properties measurements and (2) Nanofluids on nano-structured surfaces.

Reviewed a paper for the Journal of Petroleum Science and Technology, Oct. 2008

Reviewed a paper for ASME Journal of Fluids Engineering, June 2008

Reviewed a paper for ASME Heat Transfer Division, April 2008.

Reviewed a paper for International Conference on Permafrost, November 2007.

Reviewed a paper for Journal ASTM International, June 2007.

Reviewed a proposal on Fluid Displacement Research for Natural Sciences and Engineering Research Council of Canada, February 2007

Reviewed a paper for Journal of Material Processing Technology, October 2005.

Reviewed a proposal for U.S. Civilian Research & Development Foundation Science Centers Program for \$350,000 on Microscale Investigation of Wind Energy Potential, July 2005.

Reviewed a proposal for Fluid Mechanics Research for \$561,441 to Canada Foundation for Innovation, a Canadian Government Agency for advanced innovative research, July-August 2004.

Reviewed thirty six abstracts for the 54th Arctic Science Conference, 2003.

Reviewed a paper for ASME Heat Transfer Division, April 2003.

Reviewed sixteen abstracts for the 53rd Arctic Science Conference, 2002

Reviewed a proposal for Specific Research Grant of Idaho Board of Education, 1998.

Reviewed a paper for AIAA journal, 1997.

Reviewed three papers for ASCE Eighth International. Conf. on Cold Regions Engineering, 1996.

Reviewed thirteen abstracts for the 46th Arctic Science Conference, 1995

Reviewed a paper for the International Journal of Heat & Mass Transfer, 1994.

Reviewed a paper for the ASME Heat Transfer Division, 1994.

Reviewed three papers for ASME Journal of Fluids Engineering; 1989, 1993, 1994.

Reviewed a paper for ASME Fluids Engineering Division Conf. on Turbulent Boundary Layers, 1993.

Reviewed a paper for Fourth International. Symp. on Thermal Eng. and Science for Cold Regions, 1993.

Reviewed a paper for the Permafrost Conference, 1993.

Reviewed many proposals for Graduate Resource Fellowship, 1991-1993.

Reviewed three papers for Third International Symposium on Cold Regions Heat Transfer, 1991.

Reviewed a proposal for Faculty Small Grant, 1990.

Reviewed two papers for The Northern Engineer, 1989 - 90.

CONFERENCES

Chair, ASME Graduate Student Technical Conference for Dist. D at California Maritime Academy in March 23-24 and Central Washington University in April 20-21, 2011.

Chair, ASME Graduate Student Technical Conference for Dist. D at University of Nevada, Las Vegas in April 2010.

Chair, ASME Graduate Student Technical Conference for Dist. D at San Jose State University and Washington State University in April 4 and 18, 2009.

Chair, Session on Northern Engineering, 2008 Arctic Science Conference of the AAAS, September 2008.

Chair & Coordinator: ASME Graduate Student Technical Conference, Old Region VIII and District D, 2001- 2008

Chair, Session on Cold Regions Engineering, 54th Arctic Science Conference of the AAAS, September 2003.

Co-chair, Session on Cold Regions Engineering, 53rd Arctic Science Conference of the AAAS, September 2002.

Chair, Session on Cold Regions Engineering, 46th Arctic Science Conference of the

AAAS, September 1995.

Co-chair, Session on Properties and Behavior of Freezing Soils, Third International Symposium on Cold Regions Heat Transfer, June 1991.

Co-chair, Technical Session on Northern Engineering, 40th Arctic Science Conference of the AAAS, September 1989.

SERVICE IN VARIOUS COMMITTEES

AT NATIONAL LEVEL

American Society of Mechanical Engineers, Dist. D, Operating Board Member, 2006-2012.

American Society of Mechanical Engineers, Region VIII (Dist. D), SSC Senior Rep. 2005-2008.

American Society of Mechanical Engineers, Region VIII, Nominating Committee Member 2004-2006.

American Society of Mechanical Engineers, Region VIII, Nominating Committee 1st Alternate 2003-2004.

American Society of Mechanical Engineers, Region VIII, Chair, Graduate Students Tech. Conf. 2003-2012.

American Society of Mechanical Engineers, Region VIII, Nominating Committee 2nd Alternate 2002-2003

AT UNIVERSITY OF ALASKA

Member, Emil Usibelli Awards Selection Committee, AY 2013-15

Member, CEM committee on promotion and tenure, AY 2014-15

Member, Augmented committee on promotion and tenure, ME dept. AY 2013

Chair, Engineering PhD Program Review Committee, Acad. Year 2007-08.

Mechanical Engineering Department Chair, August 2006-August 2007.

Search Committee Member, Associate Dean and INE Director Position for Col. of Eng. & Mines, 2005-06.

Search Committee Member, ME/EPSCoR Position on Cold Regions Heat and Mass Transfer, 2004

Chair, Promotion, Tenure, Pre & Post-Tenure Review Committee for Engineering, 1999- 2000.

Mechanical Engineering Department Head, August 1997-August 1998.

Search Committee Member, Material Science Faculty Position, 1997

Faculty Advisor, University Academic Advising Center; September 1997-August 1998.

SOE (School of Engineering) Alternate Member in Campus-Wide Tenure & Promotion Committee; October 1994 to 1997.

SOE Representative to Graduate Resource Fellowship Committee. This position required reviewing a large number of proposals each year to select the winners; November 1991 to November 1993.

SOE Representative to Chancellor's Graduate Fellowship Committee; November 1991 to November 1993.

SOE Peer Committee for Tenure and Promotion review. Wrote the summary of reviews at times for candidates on behalf of the committee; 1991 to 1995.

SOE Sabbatical Leave Review Committee, September 1995 to 1999

ASME Faculty Advisor to the UAF Student Chapter, May 1988 through May 1990 and May 1995 to 2009.

Meritorious Incentive Awards Committee, October and November, 1988.

School of Engineering Representative to the University Assembly, April 1985 through April 1987.

Member of the Assembly Budget Committee, April 1985 through April 1987.

Mechanical Engineering Representative in Engineering Curriculum Council, Nov. 1985 through May 1986.

Member, ME Department Graduate Admissions Committee, September 1985 – 2001 & May 2004 - 2006.

IN COMMUNITY

Board Member, Fairbanks Community and Behavioral Health Center, Feb 2009- 2013

Board Member-at-Large and Treasurer, National Alliance on Mental Illness, Fairbanks Chapter: Treasurer (2007-08), Member at Large 2008-12.

President, National Alliance for the Mentally Ill, Fairbanks Chapter, 2005-2007

Chair, Northern Alaska American Society of Mechanical Engineering Subsection, 2006-08

Vice Chair, Northern Alaska American Society of Mechanical Engineering Subsection, 2004-06

Vice President, National Alliance for the Mentally Ill, Fairbanks Chapter, 2004-2005

Chair, College Relations, Northern Alaska American Society of Mechanical Engineering Group, 2003-06.

Chair, Northern Alaska American Society of Mechanical Engineering Group, 2002-03.

Treasurer, Northern Alaska American Society of Mechanical Engineering Group, 2001-02.

Secretary, Northern Alaska American Society of Mechanical Engineering Group, 2000-01.

Secretary & Member-at-Large, 2001- 2004, Fairbanks Alliance for the Mentally Ill, 1995-2000.

Volunteer time as Adult Troop Leader for Midnight Sun Council, Boy Scouts of America, 1986-96.

INDUSTRIAL EXPERIENCE

(i) At Tower Iron Works, Inc. from June 1974 through December 1978.

Performed thermal, hydraulic and mechanical design of firetube and watertube boilers, heat exchanger, economizer, superheater, fired heater, reaction furnace, pressure and process vessels, and structural components for chemical, petrochemical, and fossil and nuclear power plants. Worked extensively in heat transfer calculation, performance studies, associated piping and duct sizing through pressure drop and fluid circulation calculations, energy loss analysis, and insulation selection. Application engineering work required selection of valve, burner, expansion joint, damper, fan, pump and necessary control and instrumentation.

Mechanical design experience included stress analysis of vessels and structures due to seismic and wind loads, flow induced vibration, and preparation of technical reports to meet the American Society of Mechanical Engineering (ASME) code requirements. Developed and modified several computer programs and used general-purpose programs offered by AAA Technology, and University Computing Company. Complete familiarity with ASME codes Sec. 1, III, VIII; AISC, TEMA, and API. As project engineer, supervised the progress of projects outlined above for production scheduling, manufacturing, quality assurance, and reviewed the financial status periodically for on-time and profitable completion of the projects.

A representative list of some units designed by me and constructed under my supervision at Tower Iron Works follows.

Firetube waste heat boiler, steam drum, risers, down-comers and auxiliary components for Port Arthur Refinery, Texas. Prime contractor Ford, Bacon & Davis, Inc.

Several Steam drums for Selas Corporation.

Nuclear pressure vessels for Millstone and Seabrook plants. Prime contractors, Stone and Webster and United Engineers.

Alonized tube heat exchangers for Ralph M. Parson Co.

Several sulfur condensers for Exxon Baytown refinery. Prime contractor, Ralph M. Parson Co.

(ii) At BIF, a unit of General Signal from June 1979 through June 1983.

Performed design and analysis on butterfly valves for nuclear plants conforming to the rules of ASME Code Sec. III and non-nuclear valves built to the standard of the American Water Works Association. Ran general-purpose stress analysis computer programs and developed specialized computer programs for seismic analysis of BIF valves to verify their compliance with governing codes. Prepared detailed documentation from analysis and test results and presented them in design reports to the engineering departments of client companies. Developed a new dynamic torque analysis program combining BIF's Hydrolab test data with seismic analysis requirements for valves.

(iii) At Naval Surface Weapons Center from July 1983 - July 1984.

Performed computational studies on heat transfer and gas dynamics topics in rocket nozzles, aerodynamic heating on high Mach number missiles, and participated in the instrumentation and shipboard testing of a gun on a Navy project.

CONSULTING EXPERIENCE

Founded and operated Cold Weather Testing, Inc., a consulting corporation for science and technology in Alaska from 1993 to 2005.

Founded and operated Das Engineering Services, Inc., an engineering consulting corporation in Rhode Island from 1979 through 1983.

BIF, A Unit of General Signal, West Warwick, RI.

Hamilton & Son, Inc., Auburn, ME.

Techmar, Inc., Bristol, RI.

T.A.C.O., Inc., Cranston, RI.

Engineering Analysis Service, Inc., East Greenwich, RI.

Tecnifab, a Division of Nelmore Co., N. Uxbridge, MA.

Rheem Manufacturing Company, Fort Smith, AR.

York International, Norman, OK