LORENZO CREMASCHI, Ph.D.
Associate Professor
Department of Mechanical Engineering
Auburn University
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Interest Areas: Energy Efficiency, Scalable Energy Systems, Nano- Micro- Mini-Scale Heat and Mass Transfer, HVAC, Moisture Transport, and Building Energy Systems, Refrigeration and Energy Conversion, Low GWP Refrigerants, Lubricants and Nanolubricants, Frost and Defrost, Mini- and Micro-Channels Heat Exchangers, Fouling and Environmental Heat Transfer.

Current Research on: Low GWP Refrigerants Heat Transfer, Lubricants and Nanolubricants Heat Transfer in AC systems, Frost Growth Mitigation and Defrost Cycles, Mini- and Micro-Channels Heat Exchangers, Moisture Transport in Thermal Insulation Systems.

EDUCATION

Postdoctoral training in Mechanical Engineering Aug. 2006
Research topics investigated: micro-refrigeration systems, electro-hydrodynamic flows, electronic cooling,
Purdue University, West Lafayette, IN, USA
Supervisors and Mentors: Dr. Eckhard Groll and Dr. Suresh Garimella

Ph.D. in Mechanical Engineering July 2004
Research topics investigated: heat transfer and two phase flow of lubricants and refrigerants mixtures, advanced heat pump systems, sensors for lubricant circulation in AC automobile systems
University of Maryland, College Park, MD, USA
Ph.D. Thesis title: "Experimental and theoretical investigation of oil retention in vapor compression systems"
Thesis Advisor: Dr. Reinhard Radermacher

M.S. & B.S. Degree in Mechanical Engineering Feb. 2001
Research topics investigated: Computational heat transfer and thermal management of electronics
University of Modena and Reggio Emilia, Modena, Italy
M.S. Thesis title: "Direct numerical simulation (DNS) of natural convection inside enclosure with round heat sources"
Thesis Advisor: Dr. Mauro Corticelli

PROFESSIONAL EXPERIENCE

Present Position

Associate Professor Jan 1, 2016 - present
Auburn University, Department of Mechanical Engineering, Auburn, AL, USA

- Teaching undergraduate and graduate courses; supervising graduate and undergraduates assistants, serving on graduate student committees, advising students on curricular and career choice, serving on departmental, college, and university committees.
- Pursuing research on two phase flow heat transfer and thermodynamics of nanolubricants and refrigerant mixtures; conduct studies on frost growth and frost mitigation, pursue research on energy conversion systems and microchannel heat exchangers, fouling, HVAC and Refrigeration systems; acquiring of external funding and developing scholarly and creative activities via publication of research and presentation of technical materials, organizing seminars, technical conference, and outreach activities.

Previous experience

Associate Professor July 2012 – Dec. 2015
Oklahoma State University, School of Mechanical and Aerospace Engineering, Stillwater, OK

Assistant Professor Aug. 2006 – June 2012
Oklahoma State University, School of Mechanical and Aerospace Engineering, Stillwater, OK

Post-Doctorate Research Associate Sept. 2004 – July 2006
Ray W. Herrick Laboratories, Mechanical Engineering Department, Purdue University, West Lafayette, IN

- Investigated the performance and feasibility of meso- and micro-scale refrigeration systems for electronics cooling. I also studied electron hydro dynamic pumps and micro- diaphragm compressors for electronics cooling applications.

Graduate Research Assistant Jun. 2001- Aug. 2004
Center for Environmental Energy Engineering (CEEE), University of Maryland, College Park, MD
- Studied Carbon Dioxide (CO_2) as refrigerant for air conditioning and refrigeration systems.
- Assembled and tested new sensor to measure oil circulation in line of a vapor compression system.
- Analyzed tri-generation systems for electric power production, heating, and cooling of buildings.

AWARDS AND RECOGNITIONS

- 2014 Research Excellence Award from the College of Engineering, Architecture and Technology of Oklahoma State University; this award is "*in recognition of excellent achievements in research and scholarly activities*".
- 2013 Innovative Research Grant Award, ASHRAE; this award is for "*novel research which does not fit within the current TC research activities, but deemed to have the potential to significantly advance the state-of-the-art in heating, ventilating, air-conditioning and refrigeration engineering*".
- 2012 Halliburton Outstanding Young Faculty Award from the College of Engineering, Architecture and Technology of Oklahoma State University; Plaque says "*in recognition of outstanding achievement and professionalism in education, research and service to students*".
- 2012 International Journal of Refrigeration Best Paper of the Year Award 2011/2012.
- 2012 Best Paper (3rd place) Award at the Int. Conference of Refrigeration and Air Conditioning at Purdue.
- 2012 Best Poster Paper Presentation Award at the ASHRAE Annual and Semi-annual Conferences.
- 2008 Teaching Award from Pi Tau Sigma in the School of Mechanical and Aerospace Engineering, presented by Pi Tau Sigma ME Honorary society undergraduate students. This award is for "*best course of the year with the highest efforts required and the most useful material learnt by the students*".

CERTIFICATIONS IN THE FIELD OF RESEARCH AND TEACHING

- EPA Certified Technician Universal Type, required by 40 CFR 82 Subpart for purchasing, handling, and disposing of refrigerants and for conducting inspection and service of HVAC&R systems and equipment.
  2002 - present

TEACHING ACTIVITIES

GENERAL TEACHING PHILOSOPHY

Theoretical knowledge is fundamental for the engineering profession but theoretical knowledge alone would not be enough to respond to real word challenges in thermal energy systems. My *education philosophy* integrates *theoretical knowledge with authentic and real word projects*. The modus operandi is to consider actual phenomena and contemporary issues, logically allocate smaller and simplified questions by means of engineering judgment, and inspire students for critical and creative solutions of such question by using fundamental principles of mechanical engineering. Integration of research in engineering education is and will continue to be a strong thrust in my undergraduate and graduate courses. Effective communication among students with diverse background and technical skills is an important factor in my peer-to-peer teaching technique. Students should learn to be flexible, receptive to change, and have mutual respect to effectively work in vibrant environments that are culturally, socially, economically, and politically diverse.

TEACHING RESPONSIBILITY

General Instruction Area

The courses I teach are in the area of Thermodynamics, Heat Transfer, and Energy Conversion Systems. They are offered at the third year of mechanical engineering (Thermodynamics II), at the senior year (Design of Indoor Environmental Systems), and at the graduate level (Advanced Thermodynamics and Refrigeration). I also volunteered to teach a lower division course to freshmen (Introduction to Engineering) that focuses on students' retention in the engineering disciplines. I finally volunteer to teach a course open to all years and to all students of the engineering disciplines and architecture. This course covers sustainability and modern technological innovations abroad with focus on cultural exchange, manufacturing processes, and engineering systems of foreign countries (Study abroad course for Modern Technological Innovations of Italy).

Nature of Courses Taught

The undergraduate courses I teach include regular lectures and informal discussion sessions. Some lectures are integrated with computer lab sessions, which I teach during regular lecture hours to expose students to modern design and analysis tools in my field. I teach a senior course in buildings thermal systems. This course has a strong design component and the course revolves around real word projects for the design of heating, ventilating, and air conditioning systems. Graduate courses include regular lectures, discussion sessions, and student presentations. The graduate courses develop by adopting projects in Thermodynamics and Thermal Energy Conversion Systems.

These projects are assigned to graduate students and final presentations and written technical reports are major ingredients for the didactic of my graduate courses.

Course Taught at Auburn University (AU)
Undergraduate courses taught at AU (2)
1. Thermodynamics I (a second year engineering level course), Auburn University (Sp. 2016)
2. Thermodynamics II (a third year engineering level course), Auburn University (Sp. 2017)

Graduate courses taught at AU (None yet)

Course Taught at Oklahoma State University (OSU)
Undergraduate courses taught at OSU (4)
3. Introduction to Engineering (a freshman level course), Oklahoma State University (F 2009, 2010, 2012)
4. Thermodynamics II (a third year engineering level course), Oklahoma State University (F 2006 – 2010, Sp 2011, Sp. 2012)
5. Design of Indoor Environmental Systems (a fourth year engineering level course), Oklahoma State University (F 2008-2014)
6. Modern Technological Innovations of Italy, (for all Engineering college students at all levels, site visit and study abroad are components of this course) (Spring 2013-2015)

Graduate courses taught at OSU (2)
1. Refrigeration, Oklahoma State University (Sp 2007, 2008, 2010, 2012, 2014)
2. Advanced Thermodynamics I, Oklahoma State University (Sp 2009, 2011, 2013, 2015)

TEACHING SERVICES
Academic Advising – Graduate Students
Graduate students advised/currently advising (25)
Ph.D. students advised/currently advising (6)
(1) Sankaranarayanan K P (Ph. D. Mech. Eng.), co-advisor, Oklahoma State University, Aug 2007 – March 2011 (*winner of the 2012 International Journal of Refrigeration Best Paper Award*)
(2) Ehsan Moallem (Ph. D. Mech. Eng.), Oklahoma State University, Aug. 2008 – July 2012, (*winner of the 3rd Best Paper Award at the 14th International Refrigeration and Air Conditioning Conference at Purdue, West Lafayette, IN, USA, July 2012*)
(3) Shanshan Cai (Ph.D. Mechanical Engineering), Oklahoma State University, Aug 2009 – Dec2013 (*winner of 2012 Poster presentation award at ASHRAE meetings*)
(4) Ardiyansyah Yatim (Ph.D. Mechanical Engineering), Oklahoma State University, Aug 2011 – July 2015
(5) Andrea Arnaldo Maria Bigi, (Ph.D. Mechanical Engineering), Oklahoma State University (Jan 2013 – December 2105), and Auburn University (Jan 1, 2016 to Present)
(6) Pratik Deokar, (Ph.D. Mechanical Engineering), Oklahoma State University (Aug 2014 – Dec 2015) and Auburn University (Jan 2016 to Present)

M.S. students advised/currently advising (19)
(1) Samuel R. Hobson (M.S. Mechanical Engineering), Oklahoma State University, Jan 2007 - May 2008
(2) Spencer Lifferth (M.S. Mechanical Engineering), Oklahoma State University, Aug 2007 - May 2009
(3) Emre Ozdemir (M.S. Mechanical Engineering), Oklahoma State University, Jan 2008 - May 2009
(4) Shanshan Cai (M.S. Mechanical Engineering), Oklahoma State University, Aug 2007 – Dec 2009
(5) Annamalai, Ramesh (M.S. Mechanical Engineering), Oklahoma State University, Jan 2008 - May 2010
(6) Ellisa Lim (M.S. Mechanical Engineering), co-advisor, Oklahoma State University, April - May 2010
(7) Ozgur Aslan (M.S. Mechanical Engineering), Oklahoma State University, Jan 2008 – Dec 2010
(8) Kasey Worthington (M.S. Mechanical Engineering), Oklahoma State University, Jun 2009 – July 2011
(9) Tommy Hong (M.S. Mechanical Engineering), Oklahoma State University, Jun 2009 – Dec 2011
(10) Atharva Barve (M.S. Mechanical Engineering), Oklahoma State University, Aug 2010 – Dec 2012
(11) Auvi Biswas (M.S. Mechanical Engineering), Oklahoma State University, Aug 2010 – Dec 2012
(12) Pratik Deokar, (M.S. Mechanical Engineering), co-advisor, Oklahoma State University, Aug 2012 – May 2013
(13) Xiaoxiao Wu (M.S. Mechanical Engineering), Oklahoma State University, Aug 2010 – Dec 2013
(14) Weiwei Zhu, (M.S. Mechanical Engineering), Oklahoma State University, Aug 2012 – Dec 2014
(15) Jeremy Smith, (M.S. Mechanical Engineering), Oklahoma State University, Jan 2013 – July 2015
(16) Pedro Pablo Perez (M.S. Mechanical Engineering), Oklahoma State University, Aug 2013 – Dec 2015
(17) Thiam Wong, (M.S. Mechanical Engineering), Oklahoma State University, Jan 2014 – Dec 2015

(18) Sarath Kumar Mulugurthi, (M.S. Mechanical Engineering), Oklahoma State University, Jan 2014 – Dec 2015
(19) Ellyn Jespersen, (M.S. Mechanical Engineering), Oklahoma State University, Aug 2014 – Dec 2016

Graduate students supervised during research and scholarly activities (6)
(1) Suwat Tratassanawin (Ph.D. Mechanical Engineering), Purdue University, Sept 2004 - May 2006
(2) Abhijit A. Sathe (Ph.D. Mechanical Engineering), Purdue University, Sept 2004 - Jul. 2006
(3) Stefan Bertsch (Ph.D. Mechanical Engineering), Purdue University, Mar - Jul, 2006
(4) Edwin Lee (M.S. Mechanical Engineering), Oklahoma State University, Jun. 2006 - May 2007
(5) Austin Forrest (M.S. Mechanical Engineering), Oklahoma State University, Jul 2008 - Jan 2009
(6) Garret Hansen (M.S. Mechanical Engineering), Oklahoma State University, Aug 2009 – Jan 2010

Other advising services to students
Mentoring undergraduate students for research and scholarly activities (19)
Dr. Cremaschi has strong records of mentoring 19 undergraduate students in his research work since 2006. Dr. Cremaschi has engaged freshman research scholars; honors students; special projects course students and mentored two (2) Wentz research scholars (an undergraduate research and scholarship program at Oklahoma State University), one (1) Reuben-Trane scholar (a Nation-wide undergraduate research and scholarship program from the American Society of Heating Refrigerating and Air Conditioning Engineers – ASHRAE), two (2) OK-LSAMP Scholars (a State-wide undergraduate research and scholarship program for students that belong to Minority Groups), and (3) ME undergraduate research scholars at Auburn University. To date, the Dr. Cremaschi mentored and paid 19 undergraduate research students. Eight (8) of Dr. Cremaschi undergraduate student mentees belong to minority groups and twelve (12) of Dr. Cremaschi undergraduate student mentees continued to graduate education (with 3 most recent mentees in ME at Auburn University expressed interests in graduate school but they have not formalized their plans, yet). The table next highlights Dr. Cremaschi previous and current experience mentoring undergraduate students in Dr. Cremaschi research work. Projects have included fundamental as well as applied industrial research and several students have worked on development and assembly of experimental research facilities. Dr. Cremaschi has experience in engaging students in experimental research at the undergraduate level.

	Undergraduate Student	Major	University	Period of mentoring and supervising	Did student continue to Graduate School? Y/N
1	Shayan Sinha	B.S. ME	Purdue Univ.	Sept - Dec., 2005	Y
2	Paul Francis Egan*	B.S. AE	Oklahoma State Univ.	Aug. - Dec, 2006	Y
3	Steven Brett Walker*	B.S. AE	Oklahoma State Univ.	Aug - Dec, 2006	Y
4	Seth Hayes	B.S. ME	Oklahoma State Univ.	Jul. 2007 - Aug 2008	N
5	Chris Carrol	B.S. ME Technology	Oklahoma State Univ.	Jul. 2008 - May 2009	N
6	Adam Parker	B.S. ME Technology	Oklahoma State Univ.	Jun. 2008 - May 2009	N
7	Johnathan Peterson	B.S. ME Technology	Oklahoma State Univ.	Jun. 2008 - June 2009	N
8	Amelia Jeannette Wilson*,#, M	B.S. AE	Oklahoma State Univ.	Aug 2008 – May 2011	Y
9	Jeremy Smith	B.S. ME	Oklahoma State Univ.	Aug 2012 – Dec 2012	Y
10	Jimmy Kim	B.S. ME	Oklahoma State Univ.	Aug 2012 – Dec 2012	Y
11	Chad Rich	B.S. Ag. and Bio Eng.	Oklahoma State Univ.	Aug 2009 – Dec 2011	?
12	Kody Jones+, o, M	B.S. ME	Oklahoma State Univ.	Aug 2011 – Dec 2013	N
13	Erin Westbrook*,M	B.S. ME	Oklahoma State Univ.	Jan 2012 – May 2013	Y
14	Jaron Redmond+,M	B.S. ME	Oklahoma State Univ.	Jan 2012 – May 2013	?
15	Amy WongM	B.S. ME	Oklahoma State Univ.	Jan 2014 – May 2014	Y
16	Arkasama Bandyopadhyay#,M	B.S. ME	Oklahoma State Univ.	Aug 2014 – Dec 2014	Y
17	Alyssa Fink&,M	B.S. ME	Auburn Univ.	Sept 2016 – Present	--- expected Y
18	Ford Gibbs&	B.S. ME	Auburn Univ.	Sept 2016 – Present	--- expected Y
19	Morgan Price//,M	B.S. ME	Auburn Univ.	Sept 2016 – Present	--- expected Y

*: Honor Research Scholar
#: Wentz Scholar (an undergraduate research and scholarship program at Oklahoma State Univ.
+: OK-LSAMP Scholar (a State-wide undergraduate research and scholarship program for students that belong to Minority Groups)
o: Reuben Trane Scholar (a Nation-wide undergraduate research and scholarship program from the American Society of Heating Refrigerating and Air Conditioning Engineers – ASHRAE
//: ASHRAE Regional Chapter Scholar (a Region-wide undergraduate research and scholarship program from the American Society of Heating Refrigerating and Air Conditioning Engineers – ASHRAE
&: ME research scholars
M: Student belongs to a Minority Group

International Visiting Exchange students supervised during research and scholarly activities (8)

(1) Gianpietro Piroddi, Post-B.S. Student, NTB, Buchs, Switzerland, Oct. 2004 - May 2005 (at Purdue Univ.)
(2) Stefan Schwendener, Post-B.S. Student, NTB, Buchs, Switzerland, May – Oct., 2006 (at Purdue Univ.)
(3) Andrea Arnaldo Maria Bigi (M.S. Mechanical Engineering), Milan Polytechnic Institute, Mar 2012 – Oct 2012 (at OSU)
(4) Stefano Marelli (M.S. Mechanical Engineering), Milan Polytechnic Institute, Oct 2012 – April 2013 (at OSU)
(5) Gabriele Corti (M.S. Mechanical Engineering), Milan Polytechnic Institute, Oct 2012 – April 2013 (at OSU)
(6) Stefano Dell'Orto (M.S. Mechanical Engineering), Milan Polytechnic Institute, Mar 2014 – Nov 2014 (at OSU)
(7) Carlo Andres (M.S. Mechanical Engineering), Milan Polytechnic Institute, April 2015 – Oct 2015 (at OSU)
(8) Gennaro Criscuolo (M.S. Mechanical Engineering), Milan Polytechnic Institute, Aug 2015 – April 2016 (at OSU)

PROFESSIONAL SERVICE TO TEACHING

Assistance to Other Researchers and Courses (Guest Lectures, etc.)

Invited speaker/ guest lecturer (1)

Refrigeration systems for electronics cooling, Purdue University, West Lafayette, IN (Apr. 19, 2007)

Committee Memberships Related to Teaching

Ph.D. and Master (M.S.) Graduate Faculty Committees (30)

(1) Barry Wilson, (M.S. Mechanical Engineering), Oklahoma State University, Apr. 2007
(2) Michael Largent, (M.S. Mechanical Engineering), Oklahoma State University, Jun. 2007
(3) Brad Richard Bailey (M.S. Mechanical Engineering), Oklahoma State University, Jul 2007
(4) Xiaowei Xu (Ph.D. Mechanical Engineering), Oklahoma State University, Nov. 2007
(5) Bereket Nigusse (Ph.D. Mechanical Engineering), Oklahoma State University, Nov. 2007
(6) Saikiran Panchakar (M.S. Mechanical Engineering), Oklahoma State University, Nov. 2008
(7) Yang, Jianpeng, (M.S. Mechanical Engineering), Oklahoma State University, Nov. 2008
(8) Chris Wang, (M.S. Mechanical Engineering), Oklahoma State University, Dec. 2008
(9) Amit Bhansali, (M.S. Mechanical Engineering), Oklahoma State University, Aug. 2009
(10) Chandan Sharma, (M.S. Mechanical Engineering), Oklahoma State University, Aug. 2009
(11) Pranav Godbole, (M.S. Mechanical Engineering), Oklahoma State University, Aug. 2009
(12) Varun Kulkarni, (M.S. Mechanical Engineering), Oklahoma State University, April 2010
(13) Lu Xing, (M.S. Mechanical Engineering), Oklahoma State University, Dec 2010
(14) Samuel Anand Raj Ariekela, (M.S. Mechanical Engineering), Oklahoma State University, April 2011
(15) Kaustubh Phalak (M.S. Mechanical Engineering), Oklahoma State University, August 2011
(16) Garrett Hansen (M.S. Mechanical Engineering), Oklahoma State University, October 2011
(17) Roshan Revankar (M.S. Mechanical Engineering), Oklahoma State University, May 2012
(18) Ramprasad Chandrasekharan (M.S. Mechanical Engineering), Oklahoma State University, Jan 2011 – Dec 12
(19) Xiang He (M.S. Mechanical Engineering), Oklahoma State University, Jan 2011 – Dec 2012
(20) Edwin Lee (Ph.D. Mechanical Engineering), Oklahoma State University, Jan 2011 – Dec 2012
(21) Zeyu Xiong (M.S. Mechanical Engineering), Oklahoma State University, Jan 2011 – May 2014
(22) Matt Mitchell, (M.S. Mechanical Engineering), Oklahoma State University, Aug 2011 – Dec 2013
(23) Benjamin Rhoda, (M.S. Mechanical Engineering), Oklahoma State University, Aug 2011 – Dec 2013
(24) Sing Ramandeep, (M.S. Mechanical Engineering), Oklahoma State University, Aug 2012 – May 2013
(25) Sudha Sikha, (M.S. Mechanical Engineering), Oklahoma State University, Aug 2012 – Dec 2013
(26) Spitler Rachel, (M.S. Mechanical Engineering), Oklahoma State University, Aug 2012 – July 2013
(27) Swanand Bhagwat, (Ph.D. Mechanical Engineering), Oklahoma State University, Jan 2012 – July 2015
(28) John Holman, (M.S. Mechanical Engineering), Oklahoma State University, Dec 2013 – July 2015
(29) John Gall, (Ph.D. Mechanical Engineering), Oklahoma State University, Dec 2013 – Dec 2015
(30) Maryam Fahar, (Ph.D. Mechanical Engineering), The University of Tulsa, Nov 2014 – Dec 2015

External Review

Service and Participation in Organizations as Textbook Proposal Referee

• John Wiley & Sons, Inc for evaluation of new book development for a course in Thermodynamics

Recruiting Activities

I re-established a student exchange program with the Polytechnic Institute of Milan, Italy, in order to expand the cultural exchange of the study abroad programs in the Engineering disciplines. I advertised the exchange program and recruited graduate and undergraduate students from Oklahoma State University and from the Polytechnic Institute of Milan, Italy.

Professional Development - Self-Improvement Activities related to Teaching

- College Teaching Workshops: “Basic of Teaching”, Spring 2005, Center for Instructional Excellence, Purdue University
- Read book by Phillip C. Wankat, on “The Effective, Efficient Professor: Teaching Scholarship and Service”, Spring 2013, Self-improvement teaching activity, Tulsa, Oklahoma
- University Wide Workshop: “Mentoring Undergraduate Research”, Auburn University Biggio Center for the Enhancement of Teaching, Auburn University, Auburn, AL, October 11, 2016

Student organizations advised (club name and years advised)

Within MAE Department

1. Faculty Advisor of the PI TAU SIGMA ME Honorary Society at OSU, Aug 2009 – Dec. 2015
2. Faculty Advisor of OSU ASHRAE Student Chapter, Dec 1, 2007 – Dec. 2015

Campus wide

3. Faculty Advisor of Latin Dance Cultural Club OSU, Jan 1, 2007 – Dec. 2015

RESEARCH ACTIVITIES

RESEARCH RESPONSIBILITY AND LOAD

My research responsibilities are to initiate and to maintain research and/or extension projects, and the acquisition of external funding. They include writing proposal, secure external research funds, train research assistant, develop laboratories and tools necessary to conduct the work, and develop scholarly activities via publication, preferably in referred journals, and presentation of technical materials at national and international conferences and meetings.

General Research Statement

Concern about energy security, the threat of climate change and the need to meet growing energy demand all pose major challenges to energy decision makers. Buildings are forecast to account for 40 percent (38 Quads) of primary energy consumption in the USA in 2014, followed by the industry (33 percent) and transportation (27 percent). Building energy consumption represents a cost of approximately $416 billion in 2012 dollars. HVAC is the largest energy end-user for U.S. buildings and increasing energy efficiency has the highest priority for achieving sustainable energy future and for reducing CO_2 emissions in the short term. For example a potential improvement of the efficiency of new and existing air-conditioning and refrigeration equipment by 2 percent would lead to a primary energy savings of approximately 0.3 Quads per year, which is equivalent to the energy the U.S. consumes in oil for three days or to the energy consumed by 10 million average size homes in the U.S. for ten months.

My research contributes to the solutions of complex societal challenges especially in the *energy security and sustainable energy conversion systems.* Research on advanced energy conversion systems and multi-component two-phase thermal transport processes with interactions at micro- and nano-scale levels is my passion. My scholarship activities are, and will continue to be, *a balanced mix of fundamental and applied research*. Funds from state and federal agencies as well as from industrial and private organizations provide me the unique opportunity to pioneer on sustainability from a variety of perspectives; from energy efficiency of air conditioning systems to fresh water conservation, from heat and mass transfer phenomena during frost and de-icing processes, to development of diagnostics method and sensors for thermo-fluid systems. Scientific discovery and intellectual contributions are key steps for my scholarship and creative activities. My research is mainly experimental in nature and new state-of-the-art facilities, which I designed and constructed, are often used in my projects. Recently I started two projects that have a significant component in computational heat transfer. I broadened an in-house computational code to simulate advanced air-to-refrigerant and water-to-refrigerant heat exchangers used in the HVAC & Refrigeration field.

Research activities

~$3.1M in externally funded research (~$2.6M as PI and ~$0.5M as co-PI)
and ~$1.2M in research facilities and laboratory development projects

Current Creative Sponsored Research - $768k of current funding (4 current projects as PI, and 1 as co-PI)

As Principal Investigator (4 current projects):

- Sept 1 2016, Collaborative Research: Understanding, Mitigating, and Controlling Frost Formation Through the Use of Biphilic and Hybrid Surfaces under Static and Dynamic Conditions, National Science Foundation, ($409,764 total award, split on $198,521 at Auburn University and $211,243 at Kansas State University)
- Oct 1 2013, Smart nanolubricants for HVAC Systems, Sponsor: ASHRAE Innovative Research Grant (IRG) ($119,000)
- Jan 1 2016, Alabama Innovation Fund-Developing A High Performance Integrated Building Energy Systems & Technologies Research Program at Auburn University, Sponsor: State of Alabama ($397,012)
- Feb 2016, Critical Literature Review of Polystyrene Rigid Foam Insulation Water Absorption, Sponsor: EPS Industry Alliance ($53,142)

As Co-Principal Investigator (1 current project):

- Mar 1 2016, The Industrial Technology R&D Program International Cooperative Research at Auburn University, Sponsor: KITECH (Korea Institute of Industrial Technology) ($22,025)

Past Creative Sponsored Research - $2.2M of external research funding for 11 completed projects as PI plus 2 as co-PI

As Principal Investigator

1. Jan 2014 to July 2016, Development of a Load-Based Method of Test for Light Commercial Unitary HVAC, Sponsor: ASHRAE ($128,302)
2. October 2011 to Dec 2015, Measurement of Oil Retention in the Microchannel Heat Exchangers, Sponsor: ASHRAE 1564-RP ($199,975)

3. Jun 2012 to July 2015, Measurements of thermal conductivity of pipe insulation at below ambient temperatures and in wet condensing conditions with moisture ingress, Sponsor: ASHRAE 1646-URP ($104,935)
4. August 2011 to June 2015, Comparison of the energy performance and capacity of an Air Conditioning system that uses low GWP refrigerants, Sponsor: E. I. du Pont de Nemours and Company ($213,864)
5. Jan 1 2013 to July 2013, Measurements of thermal performance of pipe insulation systems at below-ambient temperatures in wet ambient conditions with moisture ingress, Sponsor: North American Insulation Manufacturer Association (NAIMA) ($59,979)
6. Sept. 2009 to Feb 28 2012, Effects of Fin Design on Frost and Defrost Thermal Performances of Microchannel Heat Exchangers, Sponsor: ASHRAE URP-1589 ($137,065)
7. May 2008 to October 2011, Waterside Fouling Performance of Brazed-Plate Type Condensers in Cooling Tower Applications, Sponsor: ASHRAE RP-1345 ($130,202)
8. Aug. 2008 to July 2011, Methodology to measure thermal performance of pipe insulation at below-ambient temperatures, Sponsor: ASHRAE RP-1356 ($154,003)
9. Jun. 2007 to Feb 2011, Microchannel coils in compact heat pump systems, Sponsor: Oklahoma Center for the Advancement of Science & Technology (OCAST) and Johnson Control Inc. Building Efficiency (formerly York Int.) ($299,830 direct costs)
10. Jun. 2007 to Feb 2011, Fee for Microchannel coils in compact heat pump systems, Sponsor: Johnson Control Inc. Building Efficiency (formerly York Int.) ($60,399)
11. May 2007 to Jan 2011, Design and construction of a new psychrometric research test facility at Oklahoma State University, Sponsor: AAON Inc. ($250,000 in kind)

<u>As Co-Principal Investigator:</u>

1. Feb 1 2012 to April 2015, Optimally Controlled Air-Conditioning Equipment for Sustainable Building Systems, Sponsor: OCAST ($295,415)
2. Jan 1 2012 to Nov 2013, Phase II DOE SBIR Program - Vortical-flow, Direct-Contact Heat Exchanger for Geothermal Cooling, Sponsor: Advanced Cooling Technology – DOE SBIR ($199,993)

Self-Improvement Activities related to Research

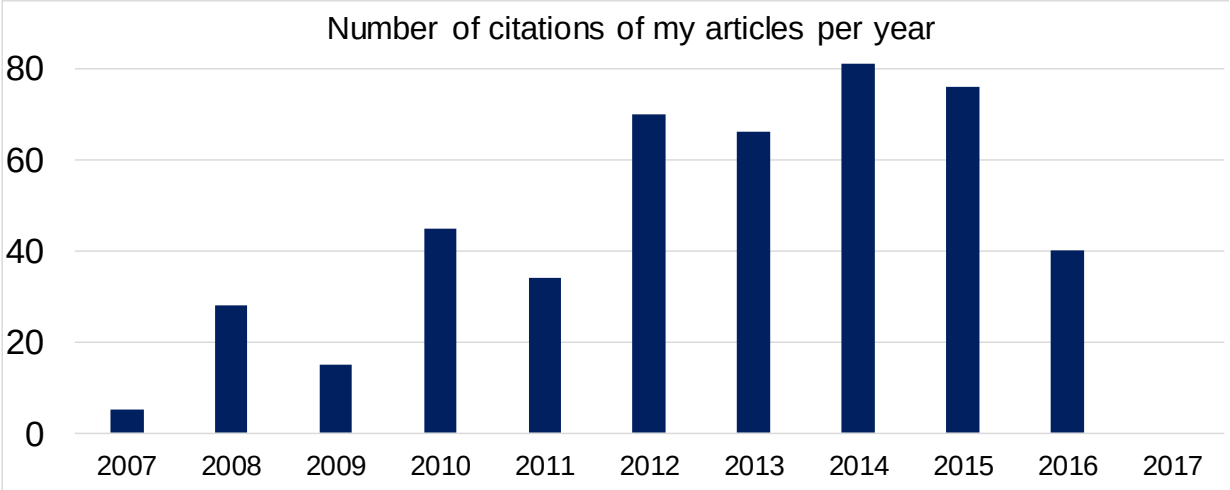
I attended the following workshops:

- NSF Grants workshop by Oklahoma Epscor, May 21, 2009, Stillwater, OK.
- OSU STEM Review, promotion, and tenure application preparation workshops, Nov 15 2011, Stillwater, OK.
- NSF-EPRI Workshop on Advanced Power Plant Cooling: Reducing Water Consumption, Nov13, 2012, Houston, TX.
- Auburn University, Proposal Development Workshop: “Finding Funding, The Basic of Grantsmanship, Components of a Proposal, Compliance Overview, and Writing to Succeed”, April 22, 2016, Auburn, AL.

PROFESSIONAL COMMUNICATIONS

Citation Indices (updated to November 2016)

	All	Since 2011
Citations	482	368
h-index	11	9
i10-index	13	9



Top 5 Most Cited Papers that I authored/co-authored.

	Title	Cited By	Year
1	Trutassanawin, S., Groll, E., A., Garimella, S., V., and Cremaschi, L., 2006, "Experimental Investigation of a Miniature-Scale Refrigeration System", *IEEE Transaction on Components and Packaging Technologies*, 29 (3), p 678-687	117	2006
2	Cremaschi, L., Hwang, Y., and Radermacher R., 2005, "Experimental Investigation of Oil Retention in Air Conditioning Systems", *International Journal of Refrigeration*, 28 (7), p 1018-1028.	48	2005
3	Moallem, E.., Cremaschi, L., Fisher, D., E., and Padhmanabhan, S., 2012, Experimental measurements of the surface coating and water retention effects on frosting performance of microchannel heat exchangers for heat pump systems, *Experimental Thermal and Fluid Science Journal*, 39, p176-188, doi: 10.1016/j.expthermflusci.2012.01.022.	27	2012
4	Padhmanabhan, S., Cremaschi, L., Fisher, D., E., 2011 Comparison of frost and defrost performance between microchannel coil and fin-and-tube coil for heat pump systems, *International Journal of Air-Conditioning and Refrigeration*, Vol. 19 (4), 273-284, DOI: 10.1142/S2010132511000600.	26	2011
5	Moallem, E.., Padhmanabhan, S., Cremaschi, L., Fisher, D., E., 2012 Experimental investigation of the surface temperature and water retention effects on the frosting performance of a compact microchannel heat exchanger for heat pump systems, *International Journal of Refrigeration*, 35 (1), p 171-186, doi:10.1016/j.ijrefrig.2011.08.010.	22	2012

Scholarly Publications

Editorials (2)

1. Cremaschi, L., and Moghaddam S., 2017, Recent Advances on Heat and Mass Transfer in Refrigeration and Air Conditioning Systems, Special Issue of the *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*), (in submission) Vol 00, 000-000, ISSN: 0000-000 print / 0000-000X, DOI:00.0000/000000.2017.00000, July 2017.
2. Bansal, P., and Cremaschi, L., 2015, Advances in refrigeration and heat transfer engineering, Special Issue of the *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*), Vol 21, 481-482, ISSN: 2374-4731 print / 2374-474X, DOI:10.1080/23744731.2015.1048623, July 2015.

Referred Journal Papers (31 total, and ~ 3 journal papers in average per year, students that I directly advised are in highlighted names below):

(I highlighted my students that I directly advised/supervised in the authors list)

1. Mulugurthi, S., Yatim, A., Cremaschi, L., 2016, Experimental investigation of lubricant retention and its impact on heat transfer capacity and pressure drop for microchannel heat exchangers, *Int. J. of Refrigeration*, (*in preparation*).
2. Cai, S., and Cremaschi, L., 2016, A critical literature review of EPS insulation systems for buildings envelope and foundations applications, *Journal of Buildings and Construction Materials*, (*in preparation*).
3. Moallem, E., Cremaschi, L., Fisher, D., E., and Hong, T., 2016, Developing empirical correlations for frost thickness, air face velocity degradation and air side heat transfer coefficient for microchannel heat exchangers under frosting condition used in heat pump applications, *Experimental Thermal and Fluid Science Journal*, (*in review as of Nov 2016*).
4. Bigi, A., M., Cremaschi, L., and Deokar, P., 2016, Nanolubricants flow boiling heat transfer enhancement in a micro-grooved tube evaporator, *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*), (*in review as of Nov 2016*).
5. Cai, S., and Cremaschi, L., 2016, A simplified Quasi steady-state model to predict moisture accumulation and its effect on the effective thermal conductivity of fibrous-type mechanical pipe insulation systems, *Energy and Buildings*, (*in review as of Nov 2016*).
6. Bigi, A., M., Dell'Orto, S., and Cremaschi, L., 2016, Modeling the effects of lubricant on refrigerants flow boiling in microchannel evaporators, *Int. J. of Refrigeration*, (*in review as of Nov 2016*).
7. Cremaschi, L., and Perez, P., P., 2016, Experimental Feasibility Study of a New Load-Based Method of Testing for Light Commercial Unitary HVAC (ASHRAE RP-1608), *Science and Technology for the Built Environment*, (formerly the *HVAC&R Research Journal*), Vol. 00 (*accepted Nov 2016 – in publication production*)
8. Cremaschi, L., Molinaroli, L., Andres, C., 2016, Experimental analysis and modeling of lubricant effects in microchannel evaporators working with low Global Warming Potential refrigerants, *Science and Technology for the Built Environment*, (formerly the *HVAC&R Research Journal*), Pages 1-14, ISSN: 2374-4731 print / 2374-474X online, DOI: 10.1080/23744731.2016.118865
9. Yatim, A., Deokar, P., S., and Cremaschi, L., 2016, Oil retention in a microchannel type condenser and its effects on heat transfer rate performance and on the pressure drop, *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*), Vol. 00, issue 00, pp. 1-15, accepted author version posted online 14 Sept 2016, ISSN: 2374-4731 print / 2374-474X online, DOE: 10.1080/23744731.2016.1221447
10. Cai, S., Zhu, W., and Cremaschi, L., 2016, Experimental Study on the Thermal Conductivity and Moisture Ingress in Closed-Cell Mechanical Pipe Insulation Systems at Below Ambient Conditions (ASHRAE RP-1646), *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*), Vol. 22 (2), pp. 201-213, DOI http://dx.doi.org/10.1080/23744731.2016.1120561 (online).
11. Gall, J., Fisher, D., E., Corti, G., Marelli, S., and Cremaschi, L., 2015, Modeling of R-410A Variable Capacity Compressor with Modelica and Experimental Validation, *Int. J. of Refrigeration*, Vol 58, 90-109, DOI: 10.1016/j.ijrefrig.2015.05.019 (online).
12. Zhu, W., Cai, S., and Cremaschi, L., 2015, Thermal Performance and Moisture Accumulation of Fibrous Mechanical Pipe Insulation Systems Operating at Below Ambient Temperature in Wet Conditions with Moisture Ingress, *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*), Vol 21, 862–875, ISSN: 2374-4731 print / 2374-474X online: DOI: 10.1080/23744731.2015.1056658; link to article: http ://dx.doi.org/10.1080/23744731.2015.1056658.
13. Cremaschi, L., Bigi, A., A., M., Wong, T., and Deokar, P., 2015, Thermodynamic Proprieties of Al2O3 Nanolubricants: Part 1, Effects on the Two Phase Pressure Drop, *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*), Vol 21, 607-620, ISSN: 2374-4731 print / 2374-474X online; DOI:10.1080/23744731.2015.1023165 (online).
14. Wu, X., Cremaschi, L., 2015, Effect of Fouling on the Thermal Performance of Condensers and on the Water Consumption in Cooling Towers Systems, *Journal of Heat Transfer Engineering*, Vol 36 (7), 1-13, ISSN: 0145-7632 print / 1521-0537 online; DOI: 10.1080/01457632.2015.954927.
15. Cai, S., Cremaschi, L., Ghajar, A., J., 2014, Pipe Insulation Thermal Conductivity under Dry and Wet Condensing Conditions with Moisture Ingress: A Critical Review, *HVAC& R research Journal*, Vol. 20 (4), 458-479, ISSN: 1078-9669 print / 1938-5587 online; DOI: 10.1080/10789669.2014.882678.
16. Moallem, E., Hong, T., Cremaschi, L., and Fisher, D., E., 2013, Developing Empirical Correlations for Frost Thickness and Air Face Velocity Degradation for Microchannel Heat Exchangers Used in Heat Pump Applications under Frosting Conditions, in *HVAC& R Research Journal*, 19 (7), pp. 779-787.

17. Moallem, E., Hong, T., Cremaschi, L., Fisher, D., E., 2013, Effect of surface coating and water retention on frost formation in microchannel evaporators (ASHRAE RP-1589), *HVAC & R Research Journal, 19:4, 347-362, ISSN: 1078-9669 print / 1938-5587 online DOI: 10.1080/10789669.2013.781056, link to article: http://dx.doi.org/10.1080/10789669.2013.781056.*
18. Moallem, E., Cremaschi, L., Fisher, D., E., 2013, Experimental Investigation of Adverse Effect of Frost Formation on Microchannel Evaporators, Part 1: Effect of Fin Geometry and Environmental Effects, *International Journal of Refrigeration*, 36 (6), pp. 1762 – 1775.
19. Moallem, E., Cremaschi, L., Fisher, D., E., and Padhmanabhan, S., 2012, Experimental measurements of the surface coating and water retention effects on frosting performance of microchannel heat exchangers for heat pump systems, *Experimental Thermal and Fluid Science Journal*, 39, p176-188, doi: 10.1016/j.expthermflusci.2012.01.022.
20. Cremaschi, L., Barve, A., Wu, X., 2012, Effect of Condensation Temperature and Water Quality on Fouling of Brazed-Plate Heat Exchangers, *ASHRAE Transactions*, 118 (Part 1), Paper No. CH-12-033.
21. Hong, T., Moallem, E., Cremaschi, L., Fisher, D., E., 2012, Measurements of Frost Growth on Louvered Folded Fins of Microchannel Heat Exchangers Part 1: Experimental Methodology, *ASHRAE Transactions*, 118 (Part 1), Paper No. CH-12-034.
22. Cremaschi, L., Cai, S., Worthington, K., M., Ghajar, A., J., 2012 Measurements of pipe insulation thermal conductivity at below ambient temperatures Part I: Experimental methodology and dry tests, *ASHRAE Transactions*, 118 (Part 1), Paper No CH-12-030 '*Awarded Best Poster Presentation Award at ASHRAE Conferences in 2012'*.
23. Padhmanabhan, S., Cremaschi, L., Fisher, D., E., 2011 Comparison of frost and defrost performance between microchannel coil and fin-and-tube coil for heat pump systems, *International Journal of Air-Conditioning and Refrigeration*, Vol. 19 (4), 273-284, DOI: 10.1142/S2010132511000600.
24. Moallem, E.., Padhmanabhan, S., Cremaschi, L., Fisher, D., E., 2012 Experimental investigation of the surface temperature and water retention effects on the frosting performance of a compact microchannel heat exchanger for heat pump systems, *International Journal of Refrigeration*, 35 (1), p 171-186, doi:10.1016/j.ijrefrig.2011.08.010.
25. Padhmanabhan, S., Moallem, E.., Fisher, D., E., Cremaschi, L., 2011, Modeling non-uniform frost growth on a fin-and-tube heat exchanger, *International Journal of Refrigeration*, 34 (8), p. 2018-2030, doi:10.1016/j.ijrefrig.2011.06.005, '*Awarded Best Paper of the Year 2011/2012'*.
26. Cremaschi, L., Spitler, J., D., Lim, E., and Ramesh, A., 2011, Waterside fouling performance in brazed-plate type condensers for cooling tower applications, *HVAC & R Research Journal*. , 17(2):198–217.
27. Iverson, B., D., Cremaschi, L., and Garimella, S., V., 2009, Effects of discrete-electrode configuration on traveling-wave electrohydrodynamic pumping, *Journal of Microfluidics and Nanofluidics*, 6 (2), p 221-230, ISSN 1613-4982 (Print) 1613-4990 (Online).
28. Cremaschi, L., and Lee, E., 2008, "Design and heat transfer analysis of a new psychrometric environmental chamber for heat pump and refrigeration systems testing", *ASHRAE Transactions*, 114 (part 2).
29. Trutassanawin, S., Groll, E., A., Garimella, S., V., and Cremaschi, L., 2006, "Experimental Investigation of a Miniature-Scale Refrigeration System", *IEEE Transaction on Components and Packaging Technologies*, 29 (3), p 678-687.
30. Radermacher R., Cremaschi, L., and Schwentker, R., A., 2006, "Modeling of Oil Retention in the Suction Line and Evaporator of Air Conditioning Systems", HVAC & R Research Journal., 12 (1), p 35-56.
31. Cremaschi, L., Hwang, Y., and Radermacher R., 2005, "Experimental Investigation of Oil Retention in Air Conditioning Systems", *International Journal of Refrigeration*, 28 (7), p 1018-1028.

Peer Reviewed Full Technical Conference Papers (29 total, and ~ 3 average peer reviewed conference papers/year, students that I directly advised are in highlighted names below)

1. Deokar, P., Bigi, A., A., M., and Cremaschi, L., 2017, Two phase flow boiling heat transfer coefficient and pressure drop of refrigerant and γ-Al_2O_3 based nanolubricant mixtures in a 9.5 mm smooth tube, *Proceedings of the 2nd Thermal and Fluid Engineering Conference, TEFC2017*, Las Vegas, NV (USA), April 2-5, Paper No. xxxx, Pages 1-15.
2. Bigi, A., A., M., and Cremaschi, L., 2016, A Comparison Between Recent Experimental Results and Existing Correlations for Microfin Tubes for Refrigerant and Nanolubricants Mixtures Two Phase Flow Boiling. *Proceedings of the 16th International Refrigeration and Air Conditioning Conference at Purdue University*, West Lafayette, IN (USA), July 11-14, Paper No. 2340, Pages 1-10.
3. Deokar, P., Cremaschi, L., Wong, T., and Criscuolo, G., 2016, Effect of Nanoparticles Aspect Ratio on the Two Phase Flow Boiling Heat Transfer Coefficient and Pressure Drop of Refrigerant and Nanolubricants Mixtures in a 9.5 mm Micro-fin Tube. *Proceedings of the 16th International Refrigeration and Air*

Conditioning Conference at Purdue University, West Lafayette, IN (USA), July 11-14, Paper No. 2098, Pages 1-10.

4. Cremaschi, L., Wong, T., Bigi, A., M., A, 2014, Thermodynamic and Heat Transfer Proprieties of Al_2O_3 Nanolubricants, *15th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2463, July 14-17, West Lafayette, IN, USA., available on line at: http://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=2499&context=iracc
5. Smith, J., and Cremaschi, L., 2014, Two Phase Flow Boiling Heat Transfer and Pressure Drop of Two New LGWP Developmental Refrigerants Alternative to R-410A, *15th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2332, July 14-17, West Lafayette, IN, USA.
6. Bigi, A., M., A., Cremaschi, L., Fisher, E., D., 2014, Modeling of Lubricant Effects in a Microchannel Type Condenser, *15th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2279, July 14-17, West Lafayette, IN, USA.
7. Yatim, A., S., Cremaschi, L., Fisher, E., D., 2014, Measurements of Oil Retention in a Microchannel Condenser for AC Systems, *15th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2325, July 14-17, West Lafayette, IN, USA.
8. Zhu, W., Cai, S., Cremaschi, L., 2014, Thermal Performance and Moisture Accumulation of Mechanical Pipe Insulation Systems Operating at Below Ambient Temperature in Wet Conditions with Moisture Ingress, *3rd International High Performance Buildings Conference*, Paper No 3183, July 14-17, West Lafayette, IN, USA.
9. Cremaschi L., Wu, X., Biswas, A., Deokar, P., 2013, Experimental study of compressor operating characteristics and performance when using refrigerants R32, R1234yf, and two new low GWP developmental refrigerants as drop-in replacements for R410A, *Int. Conf. on Compressors and their Systems*, City University of London, UK, Sept 9-10.
10. Wu, X., Cremaschi, L., (2013), Effect of fouling on the thermal performance of condensers and on the water consumption of wet cooling tower systems , Heat Exchanger Fouling and Cleaning Conference 2013, Budapest, Hungary, June 09-14.
11. Wu, X., and Cremaschi, L., (2013), Two-phase flow heat transfer of a new low GWP developmental refrigerant in smooth tube evaporator, Proceedings of the 4th IIR Conference on Themophysical Proprieties and Transfer Processes of Refrigeration, Delft, The Netherlands, June 17 – 19.
12. Cremaschi, L., 2012, A Fundamental View of the Flow Boiling Heat Transfer Characteristics of Nano-Refrigerants, ASME IMECE 2012 International Mechanical Engineering Congress & Exposition, Houston, Paper No. 87788, Nov 9-15, Houston, TX,USA.
13. Cremaschi, L., Moallem, E., Fisher, D., E., Hong, T., and Padhmanabhan, S., 2012, Frosting Performance of Fin-and-Tube Evaporators with Small Copper Tubes Diameter, *14th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2193, July 16-19, West Lafayette, IN, USA.
14. Wu, X., Cremaschi, L., 2012, An Experimental and Numerical Investigation of Fouling Phenomena in Condensers for Cooling Tower Applications, *14th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2198, July 16-19, West Lafayette, IN, USA.
15. Moallem, E., Cremaschi, L., Fisher, E., D., 2012, New Correlations for the Air-Side Heat Transfer Coefficient of Microchannel Heat Exchangers Under Quasi-Steady State Frosting Operating Conditions, *14th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2248, July 16-19, West Lafayette, IN, USA, '*Awarded Best Paper (3rd place) at the 2012 Int. Refrigeration and AC Conference at Purdue.'*
16. Cai, S., Cremaschi, L., Ghajar, A., J., 2012, Moisture Accumulation and Its Impact on the Thermal Performance of Pipe Insulation for Chilled Water Pipes in High Performance Buildings, *2nd International High Performance Buildings Conference*, Paper No 3172, July 16-19, West Lafayette, IN, USA.
17. Biswas, A., Cremaschi, L., 2012, Performance and Capacity Comparison of Two New LGWP Refrigerants Alternative to R410A in Residential Air Conditioning Applications, *14th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2196, July 16-19, West Lafayette, IN, USA.
18. Barve, A., Cremaschi, L., 2012, Drop-in Performance of LGWP Refrigerants in a Heat Pump System for Residential Applications, *14th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2197, July 16-19, West Lafayette, IN, USA.
19. Padhmanabhan, S., Fisher, D., E., Cremaschi, L., 2010, Incorporating a Frost Growth Model with Segment by Segment Heat Exchanger Simulation – Application to Microchannel Heat Exchanger, *13th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2419, July 12-15, West Lafayette, IN, USA.
20. Moallem, E.., Cremaschi, L., Fisher, D., E., 2010, Experimental Investigation of Frost Growth on Microchannel Heat Exchangers, *13th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2416,July 12-15, West Lafayette, IN, USA.

21. Padhmanabhan, S., Fisher, D., E., Cremaschi, L., 2010, A scaling approach for predicting frost growth in a heat exchanger – application to fin and tube, *Proceedings of the ASME-ATI-UTI Conference on Thermal and Environmental Issues in Energy Systems*, May 16-19, Sorrento, Italy, Vol. 1, pp. 535-540.
22. Moallem, E.., Padhmanabhan, S., Fisher, D., E., Cremaschi, L., 2010, Experimental study of onset and growth of frost on outdoor coils of air-source heat pump systems, *Proceedings of the ASME-ATI-UTI Conference on Thermal and Environmental Issues in Energy Systems*, May 16-19, Sorrento, Italy, Vol. 2, pp. 1313-1318.
23. Padhmanabhan, S., Fisher, D., E., Cremaschi, L., and Knight, J., 2008, Comparison of frost and defrost performance between microchannel coil and fin-and-tube coil for heat pump systems, in press for the *12th International Refrigeration and Air Conditioning Conference at Purdue*, July 14-17, West Lafayette, IN, USA.
24. Cremaschi, L., Groll, E., A., and Garimella, S., V., 2007, "Performance Potential and Challenges of Future Refrigeration Cooling Techniques as Electronics Cooling Systems", *Proceedings of the 2007 Thermal Challenges in the Next Generation Electronics System II (THERMES II)*, pp. 119 – 128, January 7-10, 2007, Santa Fe, New Mexico, USA.
25. Sathe, A., A., Cremaschi, L., Groll, E., A., and Garimella, S., V., 2006, "A New Model for an Electrostatically Actuated Miniature-Scale Diaphragm Compressor for Electronics Cooling", *Proceedings of the 18th International Compressor Engineering Conference at Purdue*, Paper No. C152, July 17-20, 2006, West Lafayette, IN, USA.
26. Trutassanawin, S., Cremaschi, L., Groll, E., A., and Garimella, S., V., 2006, "Performance Analysis of a Miniature-Scale Vapor Compression System for Electronics Cooling: Bread Board Setup", *Proceedings of the 11th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No. R167, July 17-20, 2006, West Lafayette, IN, USA.
27. Cremaschi, L., Hwang, Y., and Radermacher R., 2004, "Investigation of Oil Retention in Residential Heat Pump", *Proceedings of the 10th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No. R104, July 12-15, 2004, West Lafayette, IN, USA.
28. Hwang, Y., Cremaschi, L., Radermacher, R., Hirata, T., Ozaki, Y., and Hotta, T., 2004, "Oil Circulation Behavior in Low Temperature CO2 Climate Control Systems," SAE SP-1859, pp.33-38, *Proceedings of the 2004 SAE World Congress*, Detroit, USA.
29. Hwang, Y., Cremaschi, L., Radermacher, R., Hirata, T., Ozaki, Y., and Hotta, T., 2003, "Oil Circulation Ratio in CO2 Climate Control Systems," *Proceedings of the SAE 2003 World Congress*, 03HX-25, 2003, Detroit, USA.

Conferences and Abstract-only Reviewed Papers (9 total, and ~ 1 average conf. paper/year, students that I directly advised are in highlighted names below)

1. Mulugurthi, S., Yatim, A., S., and Cremaschi, L., 2016, Lubricant Retention in a R410A Microchannel Evaporator and Its Effects on Heat Transfer and Pressure Drop, *2016 ASHRAE Transactions*, ASHRAE Conference Paper No. OR-16-C014, ASHRAE Winter Conference, Orlando, FL, USA, Jan 23 - 27.
2. Smith, J., Wong, T., Deokar, P., and Cremaschi, L., 2015, Heat Transfer and Pressure Drop of New LGWP Refrigerants and Lubricant Mixtures in a 9.5 mm micro-fin evaporator tube, *2015 ASHRAE Transactions*, ASHRAE Conference Paper No. AT-15-C027, ASHRAE Annual Conference, Atlanta, GA, USA, Jun 27-Jul. 1.
3. Bigi, A., M., A., Wong, T., Deokar, P., and Cremaschi, L., 2015, Experimental Investigation on Heat Transfer and Thermophysical Properties of Mixtures of Al_2O_3 Nanolubricants and Refrigerant R410A, *2015 ASHRAE Transactions*, ASHRAE Conference Paper No. 15714, ASHRAE Winter Conference, Chicago, IL, USA, Jan 24-28.
4. Cai, S., and Cremaschi, L., 2014, An Experimentally Validated Model to Predict the Thermal Conductivity of Closed-Cell Pipe Insulation System With Moisture Ingress, *2014 ASHRAE Transactions, 120 (Part 1)*, ASHRAE Conference Paper No. NY-14-C090, ASHRAE Winter Conference, New York, Jan 22-27.
5. Biswas, A., Barve, A., and Cremaschi, L., 2013 ASHRAE Winter Conference, An experimental study of the performance of new Low Global Warming Potential (LGWP) Refrigerants at extreme high temperature ambient conditions in residential AC ducted split systems, *ASHRAE Transactions*, 119 (Part 1), Conference Paper No. DA-13-C013, ASHRAE Winter Conference, Chicago, Jan 24-29.
6. Moallem, E.., Padhmanabhan, S., Fisher, D., E., Cremaschi, L., 2011, Effect of surface coating on frosting performance of microchannel heat exchangers for heat pump systems, *Proceedings of the International Conference on Air-Conditioning and Refrigeration ICACR 2011, July 6-8, 2011, Yongpyong Resort, Gangwon-Do, KOREA, paper no112, Page 197.*
7. Worthington, K., Cremaschi., L., and Aslan, O., 2011, A new experimental low temperature facility to measure comprehensive performance rating of unitary equipment and systems operating at design and off-design conditions, *Proceedings of the International Conference on Air-Conditioning and Refrigeration ICACR 2011, July 6-8, 2011, Yongpyong Resort, Gangwon-Do, KOREA, paper no 147, Page81.*

8. Cremaschi, L., Iverson, B., D., and Garimella, S., V., 2006, "Enhanced Electrohydrodynamic Pumping at the Microscale", *2006 ASME International Mechanical Engineering Congress and Exposition, Proceedings of IMECE 2006*, Paper No. 2006-13264, November 5-10, 2006, Chicago, IL, USA.
9. Hwang, Y., Cremaschi, L., Radermacher, R., Hirata, T., Ozaki, Y., and Hotta, T., 2002, "Oil Circulation Ratio Measurement in CO2 Cycle," *Proceedings of the 2002 International Conference New Technologies in Commercial Refrigeration*, pp. 22-28, Urbana-Champaign, IL, USA, 2002.

General Press and Magazine Articles (1):

1. Cremaschi, L., 2007, Development trends for heat pump components, *Int. Energy Agency (IEA) Heat Pump Newsletter*, Vol. 25 (3), 2007.

Presentations – General Invited Talks (11 total, and ~ 2 average presentations/year)

1. Cremaschi, L., September 19, 2016, Title: Nanolubricants Heat Transfer in Thermal Energy Systems: Past Work, Present Research, and Future Opportunities. 4th Tribology and Lubrication Science Minor Symposium at Auburn University, Auburn University, Auburn, AL, USA.
2. Cremaschi, L., July 10, 2016, Impact of oil on heat transfer and pressure drop, and oil retention in heat exchangers. This presentation was part of the short course session on oil Management in Compressors, Purdue University, West Lafayette, IN, USA.
3. Cremaschi, L., Auburn University, April 23, 2015, Title: Boosting Energy Conversion Efficiency of Heat Pump Systems through Frost Growth Mitigation and Nanolubricants in Microchannel Heat Exchangers, Auburn, AL, USA.
4. Cremaschi, L., ASHRAE Oklahoma North-Eastern Regional Chapter, October 15, 2014, Title: Research in Energy Systems and Building Integration at Oklahoma State University, Tulsa, OK.
5. Cremashi, L, University of Illinois at Chicago, USA, April 26th 2013, Enhancements in Heat Transfer through Frost Mitigation and Nanolubricants in Microchannels.
6. Cremaschi, L., and Cai, S., 58th Annual Convention of the National Insulation Association, Bonita Springs (FL), April 17-20 2013, Title: Methodology to Measure Thermal Performance of Pipe Insulation at Below-Ambient Temperatures.
7. Cremaschi, L., and Cai, S., American Society for Testing and Materials (ASTM), Atlanta (GA), Oct. 22 2012, Title: Methodology to Measure Thermal Performance of Pipe Insulation at Below-Ambient Temperatures.
8. Cremaschi, L., Incheon University, Incheon, Korea, July 9 2011, Title: Buildup Phenomena in Enhanced and Compact Heat Exchangers: From Fouling in Brazed Plate-Type Condensers to Frost and Defrost in Microchannel Heat Exchangers.
9. Cremaschi, L., Seoul National University, Seoul, Korea, July 5 2011, Title: Buildup Phenomena in Enhanced and Compact Heat Exchangers: From Fouling in Brazed Plate-Type Condensers to Frost and Defrost in Microchannel Heat Exchangers.
10. Cremaschi, L., Sungkyunkwan University, Suwon, Korea, July 4 2011, Title: Buildup Phenomena in Enhanced and Compact Heat Exchangers: From Fouling in Brazed Plate-Type Condensers to Frost and Defrost in Microchannel Heat Exchangers.
11. Cremaschi, L., ASHRAE Regional Lacrosse Chapter & Ingersoll Rand / Trane, May 18, 2011, Title: Actual Performance of Enhanced Compact Heat Exchangers: from Fouling on Brazed Plate-type Condensers to Frost and Defrost on Microchannel Heat Exchangers, Trane Technology Center, La Crosse, WI.

Presentations – Professional Societies (28 total, and ~ 3 average presentations/year)

1. Cremaschi, L., Bigi, A., A., M., and Deokar, P., 2016, ASHRAE Innovative Research Grant-021: Smart Nanolubricants for HVAC&R Systems, Seminar Presentation at the ASHRAE Annual Conference, St. Luis, MO, USA, Jun 26-29.
2. Cremaschi, L., Mulugurthi, S., and Yatim, A., S., 2016, Lubricant Retention in a R410A Microchannel Evaporator and Its Effects on Heat Transfer and Pressure Drop, ASHRAE Conference Paper No. OR-16-C014, ASHRAE Winter Conference, Orlando, FL, USA, Jan 23 - 27.
3. Cremaschi, L., Smith, J., Wong, T., and Deokar, P., 2015, Heat Transfer and Pressure Drop of New LGWP Refrigerants and Lubricant Mixtures in a 9.5 mm micro-fin evaporator tube, ASHRAE Conference Paper No. AT-15-C027, ASHRAE Annual Conference, Atlanta, GA, USA, Jun 27-Jul. 1.
4. Yatim, A., Cremaschi, L., Fisher, D., E., 2015, Effect of Oil Retention on the Refrigerant-Side Heat Transfer Capacity and Pressure Drops of Microchannel Condensers for AC and Refrigeration Systems, 2015 ASHRAE Winter Conference, Chicago, IL, USA, Jan 24-28, 2015.
5. Bigi, A., M., Cremaschi, L., Wong., T., and Deokar, P., Experimental Investigation of Heat Transfer and Thermophysical Properties of Mixtures of Al_2O_3 Nanolubricants and Refrigerant R410A, 2015 ASHRAE Winter Conference, Chicago, IL, USA, Jan 24-28, 2015.

6. Cremaschi, L., Ehsan, Moallem, Daniel E. Fisher, and Sankaranarayanan Padhmanabhan, 2013, Effect of surface coatings on frost growth on microchannel heat exchangers, Presentation for Seminar 5 at the 2013 ASHRAE Annual Conference, Denver, Jun 23 2013.
7. Cremaschi, L., and Wu, X., 2013, Two-phase flow heat transfer of a new low GWP developmental refrigerant in smooth tube evaporator, Proceedings of the 4th IIR Conference on Themophysical Proprieties and Transfer Processes of Refrigeration, Delft, The Netherlands, June 19 2013.
8. Cremaschi, L., and Wu, X., 2013, Effect of fouling on the thermal performance of condensers and on the water consumption of wet cooling tower systems, Heat Exchanger Fouling and Cleaning Conference 2013, Budapest, Hungary, June 11 2013.
9. Cremaschi, L., 2013, Effects of Lubricants on Refrigerant Flow Boiling Heat Transfer: Past Work, Present Research, and Future Possibilities, ASHRAE Winter Meeting, Dallas, Jan 27 2013.
10. Cremaschi, L., 2013, High Performance-Low Global Warming Potential Refrigerants in Heat Exchangers for Residential Air-Source Heat Pump Systems, ASHRAE Winter Meeting, Dallas, Jan 27 2013.
11. Cremaschi, L., 2013, Advances in Efficient Residential Design Presentation Title: An Experimental Study of the Performance of New Low Global Warming Potential (LGWP) Refrigerants at Extreme High Temperature Ambient Conditions in Residential AC Ducted Split Systems, ASHRAE Winter Meeting, Dallas, Jan 27 2013.
12. Cremaschi, L., 2012, A Fundamental View of the Flow Boiling Heat Transfer Characteristics of Nano-Refrigerants, ASME IMECE 2012 International Mechanical Engineering Congress & Exposition, Houston, Paper No. 87788, Nov 9-15, Houston, TX,USA.
13. Cremaschi, L., Moallem, E., Fisher, D., E., Hong, T., and Padhmanabhan, S., 2012, Frosting Performance of Fin-and-Tube Evaporators with Small Copper Tubes Diameter, *14th International Refrigeration and Air Conditioning Conference at Purdue*, Paper No 2193, July 16-19, West Lafayette, IN, USA.
14. Cremaschi, L., Spitler, J., D., Lim, E., and Ramesh, A., 2012, Waterside fouling performance in brazed-plate type condensers for cooling tower applications, ASHRAE Winter Meeting, Chicago, Jan 22 2012.
15. Cremaschi, L., Cai, S., Worthington, K., M., Ghajar, A., J., 2011 A methodology to measure thermal performance of pipe insulation at below-ambient temperatures and its practical impact in condensation control, ASHRAE Summer Meeting, Montreal, June 27 2011.
16. Cremaschi, L., Moallem, E.., Padhmanabhan, S., and Fisher, D., E., 2011, Effect of surface coating on frosting performance of microchannel heat exchangers for heat pump systems, *International Conference on Air-Conditioning and Refrigeration ICACR 2011, July 6-8, 2011, Yongpyong Resort, Gangwon-Do, KOREA.*
17. Cremaschi, L., Worthington, K., and Aslan, O., 2011, A new experimental low temperature facility to measure comprehensive performance rating of unitary equipment and systems operating at design and off-design conditions, *Proceedings of the International Conference on Air-Conditioning and Refrigeration ICACR 2011, July 6-8, 2011, Yongpyong Resort, Gangwon-Do, KOREA.*
18. Cremaschi, L., Moallem, E.., Padhmanabhan, S., Fisher, D., E., 2010, Experimental study of onset and growth of frost on outdoor coils of air-source heat pump systems, *ASME-ATI-UTI International Conference on Thermal and Environmental Issues in Energy Systems*, May 19, 2010, Sorrento, Italy.
19. Cremaschi, L., Padhmanabhan, S., Fisher, D., E., A scaling approach for predicting frost growth in a heat exchanger – application to fin and tube, *ASME-ATI-UTI International Conference on Thermal and Environmental Issues in Energy Systems*, May 18, 2010, Sorrento, Italy.
20. Padhmanabhan, S., Moallem, E.., Fisher, D., E., Cremaschi, L.,2010, Microchannel Coils in Compact Heat Pump Systems, ASHRAE North-East Regional Chapter Meeting, April 8, 2010, Tulsa, OK, USA.
21. Emre Ozdemir, Cremaschi, L., 2009, Heat Transfer Comparison Between Microchannel and Round Tube Heat Exchangers, ASHRAE Regional Chapter Meeting, April 8 2009, Oklahoma City, OK, USA.
22. Padhmanabhan, S., Cremaschi, L., Fisher, D., E., and Knight, J., 2008, Comparison of frost and defrost performance between microchannel coil and fin-and-tube coil for heat pump systems, *12th International Refrigeration and Air Conditioning Conference at Purdue*, July 16 2008, West Lafayette, IN, USA.
23. Padhmanabhan, S., Fisher, D., E., Cremaschi, L.,2008, Studying of frosting on heat exchanger coils – fin-tube vs microchannel, ASHRAE Central Oklahoma Regional Chapter Meeting, April 18, 2008, Oklahoma City, OK, USA.
24. Cremaschi, L., and Lifferth, S., 2008, "Design and heat transfer analysis of a new psychrometric environmental chamber for heat pump and refrigeration systems testing", *ASHRAE Annual Meeting*, Jun 24 2008, Salt Lake City, UT, USA.
25. Cremaschi, L., Groll, E., A., and Garimella, S., V., 2007, "Potential Performances and Challenges of Future Refrigeration Cooling Techniques as Electronics Cooling Systems", *2007 Thermal Challenges in the Next Generation Electronics System II (THERMES II)*, January 7-10, 2007, Santa Fe, New Mexico, USA
26. Cremaschi, L., Daqing, Li, and Groll E. A., 2006, "Theoretical Performance Evaluation of a Carbon Dioxide Based Environmental Control Unit (ECU) with Microchannel Heat Exchangers", c-dig Meeting March 16-17, 2006, Purdue University, West Lafayette, IN, USA.

27. Cremaschi, L., Schwentker, R., A., and Radermacher R., 2006, "Modeling of Oil Retention in the Suction Line and Evaporator of Air Conditioning Systems", 2006 ASHRAE Winter Meeting, Jan. 24 2006, Chicago, IL, USA.
28. Radermacher R, Cremaschi, L., and Hwang, Y., 2004, "Comparison of Oil Retention in R134a and CO_2 Climate Control Systems", 2004 Alternate Refrigerant Systems Symposium, Scottsdale, Arizona, USA.

Patents and Inventions (1)

Dr. Cremaschi is the inventor and author of one (1) patent (application number 12501224, serial number 32420_3093/JOCI:0028) entitled "Multichannel Heat Exchanger" (July 2009).

Journal Editorial Activities (2)

1. Guest Editor of the *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*). (Jun. 2014 – Jun. 2015)
   I served as editor for the special issue entitled "Recent Advances in Thermodynamics and Heat Transfer in HVAC&R". This special issue of the HVAC&R Research Journal covered the most significant publications from the 2014 Int. Refrigeration Conference at Purdue, held on July 2014 in West Lafayette, IN.
2. Guest Editor of the *Science and Technology for the Built Environment* (formerly the *HVAC&R Research Journal*). (Jun. 2016 – Jun. 2017)
   I served as editor for the special issue entitled "Recent Advances in Heat and Mass Transfer Processes in HVAC&R". This special issue of the HVAC&R Research Journal covered the most significant publications from the 2016 Int. Refrigeration Conference at Purdue, held on July 2016 in West Lafayette, IN.

Book Chapters Revised (4)

1. 2011 ASHRAE Handbook HVAC Applications – Chapter 1 "Residences".
2. 2012 ASHRAE Handbook HVAC Systems and Equipment – Chapter 49 "Unitary Air Conditioners and Heat Pumps".
3. 2012 ASHRAE Handbook HVAC Systems and Equipment – Chapter 50 "Room Air Conditioners and Packaged Terminal Air Conditioners".
4. 2016 ASHRAE Handbook--HVAC Systems and Equipment – Chapter 39 "Condensers".

Standards Revised (2)

1. 2014, ASHRAE Standard 22, Methods of Testing for Rating Liquid-Cooled Refrigerant Condensers, Members of the Standard Project Committee 22: Joseph B. Huber, (Chair) James T. Schaefer, Lorenzo Cremaschi, Kenneth J. Shultz, Steven J. Eckels, Thomas P. Carter, Satheesh Kulankara, Reference to ASHRAE ISN 1041-2336, Available by request from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide) or toll free 1-800-527-4723.
2. 2014, ASHRAE Standard 181P, Methods of Testing for Rating Liquid to Liquid Heat Exchangers 2014, Members of the Standard Project Committee 181P: Joseph B. Huber, (Chair), James T. Schaefer, Lorenzo Cremaschi, Kenneth J. Shultz, Steven J. Eckels, Thomas P. Carter, Justin P. Kauffman, Available by request from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 678-539-2129. Telephone: 404-636-8400 (worldwide) or toll free 1-800-527-4723.

Thesis (17)

Ph.D. Dissertation (4)

1. Experimental Investigation of Oil Retention and Its Effects on Heat Transfer and Pressure Drop in Microchannel Heat Exchangers, Ardiyansyah S. Yatim, July 2015.
2. Thermal Performance of Mechanical Pipe Insulation Systems at Below-Ambient Temperature, Shanshan Cai (Ph.D. Mech Eng.), Oklahoma State University, Dec 2013.
3. Experimental and Theoretical Investigation of Effect of Fin Geometry on Frost Formation on Microchannel Heat Exchangers, Ehsan Moallem (Ph. D. Mech. Eng.), Oklahoma State University, July 2012.
4. Study of Frost Growth on Outdoor Coils of Air-Source Heat Pumps, March 2011. Sankaranarayanan K P (Ph. D. Mech. Eng.), co-advisor, Oklahoma State University.

M.S. Thesis (16)

1. Development of a Test Facility and Preliminary Testing of Flow Boiling Heat Transfer of R410A Refrigerant with Al_2O_3 Nanolubricants, Thiam Wong, (M.S. Mech. Eng.), Dec 2015.
2. Oil Retention and its Effects on Pressure Drop and Heat Transfer in Microchannel Evaporators of Air Conditioning and Refrigeration Systems, Sarath Kumar Mulugurthi, (M.S. Mech. Eng.), Dec 2015.

3. Development of a Load-Based Method of Testing for Light Commercial Unitary HVAC, Pedro Pablo Perez Paez, (M.S. Mech. Eng.), Dec 2015.
4. Experimental Investigation of Two Phase Flow Boiling Heat Transfer and Pressure Drop of LGWP Refrigerants in an Internally Enhanced Tube Evaporator, Jeremy Smith (M.S. Mech. Eng.), July 2015.
5. Measurement of Thermal Conductivity of Pipe Insulation Systems at Below-ambient Temperature and in Wet Condensing Conditions with Moisture Ingress, Weiwei Zhu (M.S. Mech. Eng.), Dec 2014.
6. Experimental and Theoretical Study of Water Side Fouling Thermal Performance of Refrigerant to Water Condenser, Xiaoxiao Wu (M.S. Mech. Eng.), Oklahoma State University, Dec 2013.
7. Development of an Experimental Methodology for Measurement of Oil Retention and its Effect on the Microchannel Heat Exchanger, Pratik Deokar, (M.S. Mech. Eng.), co-advisor, Oklahoma State University, July 2013.
8. Performance and Capacity Comparison of Two New LGWP Refrigerants Alternative to R410A in Residential Air Conditioning Applications, Auvi Biswas (M.S. Mech. Eng.), Oklahoma State University, Dec 2012.
9. Study of Low Global Warming Potential Refrigerants in Heat Pump Systems for Stationary Applications Atharva Barve (M.S. Mech. Eng.), Oklahoma State University, Dec 2012.
10. Measurements of Frost Growth on Louvered Folded Fins of Microchannel Heat Exchangers Tommy Hong (M.S. Mech. Eng.), Oklahoma State University, Dec 2011.
11. Calibration of the OSU Psychrometric Chamber and First Experiments Kasey Worthington (M.S. Mech. Eng.), Oklahoma State University, July 2011.
12. An Experimental Facility to Measure Fouling Resistance in Condensers Annamalai, Ramesh (M.S. Mech. Eng.), Oklahoma State University, May 2010.
13. A preliminary Investigation of Fouling in Brazed Plate Heat Exchangers Ellisa Lim (M.S. Mech. Eng.), co-advisor, Oklahoma State University, May 2010.
14. Design of an Experimental Facility for Frost Growth Study in Microchannel Heat Exchangers Shanshan Cai (M.S. Mech. Eng.), Oklahoma State University, July 2009.
15. Thermal Performance Comparison between Microchannel and Round Tube Heat Exchangers Emre Ozdemir (M.S. Mech. Eng.), Oklahoma State University, May 2009.
16. Design and Construction of a new psychrometric chamber Spencer Lifferth (M.S. Mech. Eng.), Oklahoma State University, May 2009.

Technical Reports (9)

1. Cremaschi, L., and Cai, S., Critical Literature Review of Polystyrene Rigid Foam Insulation Water Absorption, Expanded PolyStyrene Industry Alliance (EPSIA), Available upon request from Betsy Steiner (EPSIA executive director), Address: 1298 Cronson Boulevard, Suite 201, Crofton, MD, 21114, Date: Sept 30, 2016.
2. Perez, P., and Cremaschi L., ASHRAE RP-1608 Final Report "Development of a Load Based Testing of Light Commercial Unitary HVAC, ASHRAE Archives (available by request to ASHRAE), July 2016.
3. Yatim, A., S., Cremaschi, L., Bigi, A. A. M., Mulugurthi, S., Dell'Orto, S., ASHRAE RP 1564 Final Report "Measurements of Oil Retention in Microchannel Heat Exchangers", ASHRAE Archives (available by request to ASHRAE), August 2015.
4. Zhu, W., Cremaschi, L., Cai, S., 2015, ASHRAE 1646 Final Report, "Measurement of Thermal Conductivity of Pipe Insulation Systems at Below-ambient Temperature and in Wet Condensing Conditions with Moisture Ingress", ASHRAE Archives (available by request to ASHRAE), July 2015.
5. Cai, S., Zhu, W., and Cremaschi, L., 2013, Measurements of Thermal Conductivity of Polyisocyanurate (PIR) Pipe Insulation Systems at Below-Ambient Temperatures and in Wet Condensing Conditions with Moisture Ingress, Report to the North American Insulation Manufacturers Association (NAIMA), Available by request from NAIMA, July 2013.
6. Zhu, W., Cai, S., and Cremaschi, L., 2013, Measurements of Thermal Conductivity of Mineral Fiber Pipe Insulation Systems at Below-Ambient Temperatures and in Wet Condensing Conditions with Moisture Ingress, Report to the North American Insulation Manufacturers Association (NAIMA), Available by request from NAIMA, July 2013.
7. Cremaschi, L., Fisher, D., E., Moallem, E., Hong, T., Deokar, P., ASHRAE 1589-RP Final report, "Effect of Fin Design on Frost and Defrost Thermal Performances of Microchannel Heat Exchangers", ASHRAE Archives (available by request to ASHRAE), March 2012.
8. Cremaschi L., Spitler J., D., Wu, X., Barve, A., Lim, E., Ramesh, A., ASHRAE Project 1345-RP Final report, "Waterside fouling performance of brazed-plate type condensers in cooling tower applications", ASHRAE Archives (available by request to ASHRAE), Feb 2012.
9. Cremaschi L., Ghajar A., Cai, S., and Worthington, K., ASHRAE Project 1356-RP Final report, "Methodology to measure thermal performance of pipe insulation at below-ambient temperatures, ASHRAE Archives (available by request to ASHRAE), Jan 2012.

SERVICE AND PROFESSIONAL DEVELOPMENT ACTIVITIES

Service and Participation in Organizations as Proposal Referee

I participated as research proposal referee and panel reviewer for the following organizations:

- National Science Foundation, Chemical, Bioengineering, Environmental, and Transport Systems (CBET)
- US Department of Energy (though the Energy Efficiency Division)
- US Department of Energy (though the Building Technology Office (BTO)). This service also includes 2 years as projects reviewer for the Peer-Review DOE BTO Program in years 2015 and 2016.
- California Energy Commission (through the Building Energy Research Grant (BERG) Program)
- California Energy Commission (through the California Energy Innovations Small Grant (EISG) Natural Gas Program (EISG))
- Oklahoma State University Planning Grants for Establishing Interdisciplinary Programs (Oklahoma State Univ.,)
- Texas Higher Education Coordinator Board
- International Copper Association

Participation in Journals, Conferences, and Proceedings as Referee

I participated as referee and reviewer of the following journals and conferences:

1. International Journal of Heat and Mass Transfer
2. International Journal of Refrigeration
3. International Journal of Applied Energy
4. International Journal of Thermal Science
5. American Society of Mechanical Engineers (ASME) Journal of Heat Transfer
6. Journal of Micromechanics and Microengineering
7. Heat Transfer Engineering Journal
8. HVAC&R Research Journal (now Science and Technology for the Built Environment Journal)
9. Energies Journal
10. International Journal of Energy Research
11. IEEE Transactions on Very Large Scale Integration System
12. IEEE Transactions on Mechatronics
13. ASHRAE Transactions (American Society of Heating, Refrigerating and Air-Conditioning Engineers)
14. Energies Journal
15. Energy Conversion and Management Journal
16. Proceedings of the International Institute of Refrigeration World Congress, Prague 2011, China 2013
17. Proceedings of the ASME IMECE 2012 International Mechanical Engineering Congress & Exposition, Houston, Nov 9-15, Houston, TX, USA
18. Proceedings of the 2012 ASME Conference ESFulelCell2012 – July 23-26, 2012, San Diego, CA, USA
19. Proceedings of 2006 11th International Refrigeration and Air Conditioning Conference at Purdue
20. Proceedings of 2006 ITherm (Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic System) International Conference, San Diego, CA, USA May 30 – June 2, 2006
21. Proceedings of 2006 ACEEE (American Council for an Energy-Efficient Economy) Conference on Energy Efficiency in Buildings
22. 2nd Thermal and Fluid Engineering Conference, Las Vegas, NV, USA, April 2-5, 2017.

OTHERS

My professional development expanded tremendously during the last three years. On a national level I am an active member of the American Society of Heating, Refrigerating, and Air Conditioning Engineering (ASHRAE). I am the chair of a Technical Committee TC8.4 for Refrigerant to Air Heat Transfer Equipment. I participate in five (5) Technical Committees and in two (2) Standard Committees in ASHRAE as active voting member, organizer, and reviewer. On an international arena I am a commission member of the International Institute of Refrigeration (IIR) and an active member of the International Energy Agency Heat Pump Program/U.S. National Team. These societies provide collaborations, networking, and the exchange of scientific intellectual ideas among scientist and researchers. I served as program chair for the Purdue Refrigeration and Air Conditioning Conference in 2006 and I served as technical session chair of several programs at the ASHRAE meetings.

OTHER SERVICE

Administrative – University Wide Service

- Auburn University, Member of the Auburn University Delegation for Developing International Collaborations (R&D, academic course/curriculum, faculties/students exchange programs) with German Universities and Industries, May 2016 to Present.

- Oklahoma State University, Student Technical Fee Committee, College of Engineering, Architecture, and Technology (CEAT), Jan 2013 – Dec. 2015
- Oklahoma State University, Planning Grants for Establishing Interdisciplinary Programs (Oklahoma State Univ.) May 2012
- Oklahoma State University, Halliburton Outstanding Young Faculty Award Committee (CEAT of Oklahoma State University), Jan – Feb 2013
- Oklahoma State University, 2013 Halliburton Undergraduate Program Review Committee (Oklahoma State Univ.) April 2013

Departmental Services

- Oklahoma State University, Chair of the College of Engineering, Technology, and Architecture (CEAT) Energy Systems New Undergraduate Laboratory Development Committee (May 2015 – Dec. 2015)
- Oklahoma State University, Chair of the Mechanical and Aerospace Engineering (MAE) Graduate Activity Committee (Jan 2014 – Dec. 2015)
- Oklahoma State University, Chair of the MAE Laboratory Development Committee (Aug 2012 – Dec 2013)
- Oklahoma State University, Member of the MAE Search Committee for Recruiting Faculty in the Computational Heat Transfer and Fluid Dynamic area (Aug 2014 – Dec 2014)
- Oklahoma State University, Member of the MAE Search Committee for Recruiting Faculty in the Thermal Energy Systems area (Aug 2013 – Jan 2014)
- Oklahoma State University, Member of the MAE Undergraduate Student Program Committee (Aug 2012 – Dec 2013)
- Oklahoma State University, Member of the MAE Computer and Software Laboratory Committee (Jan. 2007 to Aug 2012)

Professional Organizations

Professional Societies

- Member of the International Energy Agency Heat Pump Program/U.S. National Team (Jan. 2007 –present)
- Member of the International Institute of Refrigeration (IIR) / U.S. National Committee (Jan. 2007– present)
- Commission member of the IIR Commission B2 - Refrigerating Equipment (Jan 2012 – present) and Commission E2 - Heat pumps, energy recovery (Aug. 2007 – present)
- ASHRAE member (American Society of Heating, Refrigerating and Air-Conditioning Engineers) (Jul. 2005 – present)
- Voting Member of Technical Committees of ASHRAE: TC8.5 Liquid to Refrigerant Heat Transfer (Jul. 2012 – present), TC1.3 Heat Transfer & Fluid Flow (Jul. 2009 – present), TC8.4 Air-to-Refrigerant Heat Transfer Equipment (Jul. 2010 – present), and TC8.11 Unitary and Room Air Conditioners and Heat Pump (Jul. 2007 – July 2011); Corresponding Member of TC 8.9 Residential Refrigerators and Food Freezers (Jul. 2007 – present), TC8.5 Liquid to Refrigerant Heat Transfer (Jul. 2008 – July 2012), TC8.4 Air-to-Refrigerant Heat Transfer Equipment (Jul. 2008 – July 2010)
- Member of the American Society of Thermal and Fluids Engineers (ASTFE, Jul. 2016 – present)

Synergistic Activities

- Program subcommittee chair of TC1.3 Heat Transfer & Fluid Flow (Jul. 2011 – present)
- Treasurer of the International Institute of Refrigeration (IIR) / U.S. National Committee (Jan. 2016– present)
- Chair of two technical sessions on "Energy, Water, and Sustainability" program at the 2nd Thermal and Fluid Engineering Conference, Las Vegas, NV, USA, April 2-5, 2017, (Aug 2016 – April 2017)
- Chair of ASHRAE Technical Committee TC8.4 Air-to-Refrigerant Heat Transfer Equipment (2013 – 2016)
- Member of the ASHRAE Standard Committees to review and update the standards SPC 181P, Methods of Testing for Rating Liquid to Liquid Heat Exchangers (March 2011 – May 2014), and SPC 22, Methods of Testing for Rating Water-Cooled Refrigerant Condensers (March 2011 – May 2014)
- Session chair of the Technical Session "Refrigeration for the Future, Latest Research on Refrigeration Systems and Components" at the summer ASHRAE annual meeting in Albuquerque, NM, (Jun. 26 – 30, 2010)
- Vice-chair of ASHRAE Technical Committee TC8.4 Air-to-Refrigerant Heat Transfer Equipment (Jul. 2011 – June 2013)
- Chairman of the ASHRAE Handbook sub-committee for TC8.11 Unitary and Room Air Conditioners and
- Heat Pump (Jul 2008 – July 2011)
- Program Chairman of the 11th International Refrigeration and Air Conditioning Conference at Purdue, Purdue University, West Lafayette, IN (Jan. 2005 – Jul, 2006)
- Assistant Coordinator of the Carbon Dioxide Interested Group (C-DIG) meeting, Purdue University, West Lafayette, IN (Mar. 12 – 17, 2006)

INDEPENDENT PROFESSIONAL CONSULTING ACTIVITIVIES (2)

I conducted independent professional consulting activities in the following suits:

1. Expert Witness in a Nationwide legal litigation about HVAC Systems and Equipment; Retained by Law Firm Hogan Lovells US LLP, in Washington D.C. and Miami, FL, USA (case style: St. Gregory Cathedral School, et al. v. LG Electronics, Inc., et al., Case No. 6:12-cv-739 (MHS), filed in the U.S. District Court for the Eastern District of Texas). Oct. 2014 to July 2015.
2. Expert Consultant in a legal litigation about HVAC Systems and Refrigerants; Retained by Law Firm Pignato, Cooper, Kolker, & Roberson, P.C., Oklahoma City, OK, USA Jan. 2015 to Dec 2015.

OUTREACH ACTIVITIES

Short Courses and Workshops (1)

- Oil Management in Compressors. Lecture from L. Cremaschi on the Topic "Impact of oil on heat transfer and pressure drop, and oil retention in heat exchangers". This short course was organized at Purdue University, West Lafayette, IN, USA on July 10 2016.

OTHER RELEVANT INFORMATION AND MATERIAL

Professional meetings and conferences attended (37 total, and ~ 4 average conferences/year)

1. 2016 15th Int. Refrigeration and Air Conditioning Conference, 22nd Int. Compressor Conference, and 3rd Int. High Performance Building Conference at Purdue, West Lafayette, IN, USA, July 11-14, 2016.
2. 2016 ASHRAE Annual Conference (St. Luis, MO, June 26 - 29, 2016).
3. 2016 ASHRAE Semi-Annual Winter Conference (Orlando, FL, Jan 23 -27, 2016).
4. 2015 ASHRAE Annual Conference (Atlanta, GA, Jun 27 – Jul 1, 2015).
5. 2015 ASHRAE Semi-Annual Winter Conference (Chicago, IL, Jan 24 -27, 2015).
6. 2014 ASHRAE Annual Conference (Seattle, WA, Jun 27 – Jul 2, 2014).
7. 2014 ASHRAE Oklahoma North-East Regional Chapter Meeting, Oct 15, Tulsa, OK.
8. 2014 ASHRAE Semi-Annual Winter Conference (New York City, NY, Jan 22-27, 2014).
9. 2013 ASHRAE Annual Conference (Denver, CO, Jun 22-26, 2013).
10. 4th Conference on Thermophysical Properties and Transfer Processes of Refrigerants (Delft, The Netherland, June 17-19, 2013).
11. 2013 International Conference on Heat Exchanger Fouling and Cleaning (Budapest, Hungary, Jun 9 to 14, 2013).
12. 2013 ASHRAE Semi-Annual Conference (Dallas, TX, Jan 24-29, 2013).
13. ASME IMECE 2012 International Mechanical Engineering Congress & Exposition, Houston, Nov 9-15, Houston, TX, USA.
14. 2012 14th Int. Refrigeration and Air Conditioning Conference, 21st Int. Compressor Conference and 2nd Int. High Performance Building Conference at Purdue, July 16-19, West Lafayette, IN, USA.
15. 2012 ASHRAE Annual Conference, 2012 International Institute of Refrigeration Meeting (San Antonio, TX, USA, June 24-27).
16. 2012 ASHRAE Winter Conference, 2012 International Institute of Refrigeration Meeting, (Chicago, IL, Jan 22-25).
17. 2011 ASHRAE Annual Conference, 2011 International Institute of Refrigeration Meeting (Montreal, QC, Canada, June 25-29).
18. 2011 International Conference on Air-Conditioning and Refrigeration ICACR 2011, July 6-8, 2011, Yongpyong, Korea.
19. 2011 ASHRAE Winter Conference, 2011 International Institute of Refrigeration Meeting, 2011 IEA US Heat Pump National Team Meeting, (Las Vegas, NV, January 29-February 2).
20. 2010 13th International Refrigeration and Air Conditioning Conference at Purdue, July 12-15, West Lafayette, IN.
21. 2010 ASHRAE Annual Conference, 2010 International Institute of Refrigeration Meeting, 2010 IEA US Heat Pump National Team Meeting (Albuquerque, NM, June 26-30).
22. 2010 ASME-ATI-UTI International Conference on Thermal and Environmental Issues in Energy Systems, Sorrento, Italy.
23. 2010 ASHRAE Oklahoma North-East Regional Chapter Meeting, April 2010, Tulsa, OK.
24. 2010 ASHRAE Winter Conference, 2010 International Institute of Refrigeration Meeting, 2010 IEA US Heat Pump National Team Meeting (Orlando, FL, January 23-27).
25. 2009 ASHRAE Annual Conference, 2009 International Institute of Refrigeration Meeting, 2009 IEA US Heat Pump National Team Meeting (Louisville, KY, June 20-24).
26. 2009 ASHRAE Regional Chapter Meeting, April 8 2009, Oklahoma City, OK.

27. 2009 ASHRAE Winter Conference, 2009 International Institute of Refrigeration Meeting, 2009 IEA US Heat Pump National Team Meeting (Chicago, IL, January 24-28).
28. 2008 12th Int. Refrigeration and Air Conditioning Conference at Purdue, West Lafayette, IN.
29. 2008 ASHRAE Annual Meeting, 2008 International Institute of Refrigeration Meeting, 2008 IEA US Heat Pump National Team Meeting (Salt Lake City, UT, June 21-25).
30. 2008 ASHRAE Central Oklahoma Regional Chapter Meeting, April 18, 2008.
31. 2008 ASHRAE Winter Meeting, 2008 International Institute of Refrigeration Meeting, 2008 IEA US Heat Pump National Team Meeting (New York, Jan 19-23).
32. 2007 ASHRAE Annual Meeting, 2007 International Institute of Refrigeration Meeting, 2007 IEA US Heat Pump National Team Meeting (Long Beach, CA June 22-26).
33. 2007 ASHRAE Winter Meeting, 2007 International Institute of Refrigeration Meeting, 2007 IEA US Heat Pump National Team Meeting (Dallas, Jan 28-31).
34. 2007 THERMES, Thermal Challenges in Next Generation Electronic Systems, (Santa Fe, NM, Jan 7 – 10).
35. 2006 ASHRAE Winter Meeting, 2006 International Institute of Refrigeration Meeting (Chicago, Jan 24-28).
36. 2003 ASHRAE Winter Meeting (Chicago, Jan 23-27).
37. 2002 ASHRAE Winter Meeting (Atlantic City, Jan 15-18).