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## **Dr. Ahmad K. Sleiti**

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### **EDUCATION**

- **University of Central Florida (UCF), Orlando, FL**  
**Ph.D. in Mechanical Engineering, Thermal Fluids** April 2004  
Dissertation topic: *Effect of Coriolis and Centrifugal Forces on Turbulence and Transport at High Rotation and Buoyancy Numbers*  
**Advisor:** Prof. Jay Kapat. **GPA:** (3.99/4.00)
- **University of Jordan (UJ), Amman, Jordan** August 2001  
**Master of Science, Mechanical Engineering, Thermal sciences,**
- **Rostov State Building University (RISI), Rostov on Don, Russia** July 1991  
**Bachelor and Master of Science in Mechanical Engineering / Heat and Gas Supply and Ventilation**

### **AREA OF EXPERTISE**

- Experimental and Computational Fluid Dynamics and Heat Transfer, Turbulence.
- Aerodynamics and heat transfer for gas turbines and other turbomachineries.
- Transport Phenomena in Fuel Cells: SOFC
- Heating, Refrigerating, and Air-conditioning (HVAC)

### **PROFESSIONAL EXPERIENCE**

- University of Central Florida (UCF)  
**Visiting Assistant Professor** 08/2007 – Present  
Department of Mechanical, Materials and Aerospace Engineering (MMAE)  
Department of Engineering Technology (ENT)
- University of Central Florida (UCF)  
**Research Associate, Project Manager and Adjunct Professor** 08/2005 – 08/07  
Department of Mechanical, Materials and Aerospace Engineering (MMAE)
- University of Central Florida (UCF)  
**Research Scholar/Scientist, Project Manager and Instructor** 04/2005 – 08/2005  
UCF / Siemens Center of Excellence, Advanced Turbines and Energy Systems
- Electrodynamics Associates, Inc., Oviedo Florida, USA.  
**Senior Mechanical Engineer** 11/2003-05/2004  
Thermal and mechanical design and testing of high-speed rotating electric machines
- University of Central Florida (UCF)  
**Research and Teaching Assistant/Instructor** 08/2001– 05/04  
Department of Mechanical, Materials and Aerospace Engineering (MMAE)
- Penta Group Engineering Contractors Co, Amman, Jordan  
**Project Engineer & Project Manager** 12/1995-07/2001  
Thermal management, design of components and drawings, Heating, Refrigeration and Air Conditioning Design, Installation and Testing
- SIGMA Consulting Engineers, Amman, Jordan  
**Design and Consulting Engineer** 11/1993-11/1995  
Thermal management, design and drawings, Heating, Refrigeration and Air Conditioning Design and Supervision.

- BETA Engineering Industries Co, Amman, Jordan.  
**Research and Development Engineer**  
Design, Manufacturing and Development of Boilers, Compressors and Burners

10/1991-10/1993

### **CONSULTING ACTIVITIES**

- (a) Electrodynamics Associates, Inc., Oviedo Florida, USA.
- (b) Rini Technologies Inc., (RTI), Orlando, Florida, USA.

### **TEACHING EXPERIENCE AND OTHER ACADEMIC ACTIVITIES**

#### **(a) Courses Taught at University of Central Florida (UCF), Orlando, FL**

##### Undergraduate level:

1. EGN 3343: **Engineering Thermodynamics**, (Fall 04, Spring 05, Spring 2006 and Summer 07)
2. EML 4142: **Heat Transfer** (Fall 2005),
3. EML 3701: **Fluid Mechanics I**, (Fall 2006)
4. EGN -3358: **Thermo-fluids-Heat Transfer**, (Fall 2006 and Fall 2007).
5. EGN 3321: **Dynamics (honors)**, (Spring 2007).
6. EML-4304: **Thermo-Fluids Measurements - II, EML-4304** (Spring 2007)
7. ETM 4512C: **Applied Design of Machine Elements**, (Fall 2007).
8. ETI 4906: **Ground Systems Design**, (Fall 2007).
9. ETM 4220: **Applied Energy Systems**, (Spring 2008).

##### Graduate Level:

1. EML-6725: **Computational Fluid Dynamics and Heat Transfer (CFD)**, (Spring 2005 and Spring 2006).

##### Laboratory teaching and development:

1. EML-4304: **Thermo-Fluids Measurements - II, EML-4304** (Spring 2007).
2. EST 3543: **Programmable Logic Applications and Device Integration** (Fall 2007).
3. Have instructed graduate and undergraduate students in measurements, energy, CFD and Advanced Turbines and Energy Systems laboratories. Involved in student senior design projects.
4. Working on developing HVAC lab.

##### Curriculum Development:

- Taking active participation in developing, formulation and finalization of the HVAC track and the associated curriculum.

#### **(b) Teaching Interests:**

Thermodynamics, Heat and Mass Transfer, Fluid Mechanics, Measurements and Instrumentation, Computational Fluid Dynamics and Heat Transfer (CFD), Advanced Numerical Methods, Computer Methods in M.E, Turbulence, Turbomachinery, Viscous Fluid Flow, Energy Systems, Transport Phenomena in Fuel Cells, Alternative Energy Engineering (Fuel Cells and Biomass).

#### **(c) Graduate Student Activities:**

Supervised 4 Ph.D., 2 M.S. and 3 B.S. Honors in gas turbine lab. Supervising 1 Ph.D. and 2 B.S. students

#### **(d) Publication Record:**

12 refereed journal papers, 4 under review journal papers, 13 peer-reviewed papers in conference proceedings, 9 refereed archival papers presented in international conferences, and more than 7 technical reports.

#### **(e) Research Funding Record:**

Have received \$820K of research funds as Senior Investigator and project manager and another \$405K of funds as Co-Principal Investigator.

#### **(f) Proposal Activities Record:**

Have submitted proposals as PI and CO-PI with a total requested amount of \$2,700,000 that are pending at present.

**(g) Honors and Awards:**

Consistently received excellent teaching evaluations at UCF. Nominated for Best Ph.D Dissertation Of 2004. Full Tuition Waiver from Graduate Studies at UCF (2001-2004). Travel Grants (03–06), Graduate Merit Fellowship/UCF, 02-03 (\$5000). Seminar Participation and Travel Award from Japanese Agency (JICA), Distinguished Student Award - Full Scholarship to Pursue B.S and MS in Russia (85- 91). Best Employee Award (1996-1997) & (1999-2000) - Ministry of Labor -Jordan.

**(h) Service Record:**

Session organizer in IMECE-2005; ASME Advanced Energy Systems Division Committee Member, actively mentors and advises students; stay in constant communication and provide technical assistance in need to local industry and community.

**(i) Selected Professional Activities:**

- Book review: Fundamentals of Engineering Thermodynamics, 6<sup>th</sup> Edition by M. Moran and H. Shapiro. John Wiley & Sons, Inc.,
- Peer Reviewer for Journal of Thermal Sciences, ASME, IMECE and others

**PROFESSIONAL PARTICIPATIONS**

Member of American Society of Mechanical Engineers (ASME),  
Member of American Institute of Aeronautics and Astronautics (AIAA),  
Member of American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE),  
Member of The American Society of Engineering Education (ASEE)

**PROFESSIONAL SKILLS**

- Computer Languages: C/C++ and Matlab
- Computer Systems: WINDOWS, UNIX
- CFD and FVM Software: FLUENT, GAMBIT, and Pro-E 2001, Tecplot
- CAD/CAM and FEM Software: ANSYS, I-DEAS, Pro/E, AUTOCAD
- Project Management Software: Microsoft Project
- Scientific Software: MathCAD, MATLAB
- Experimental Equipment: TSP, PSP, Temperature and Pressure Measurements, Flow Visualization Techniques, Lab View and more....

**PROFESSIONAL TRAINING AND CERTIFICATES**

- SBIR/STTR Grant preparation workshop (2006)
- Fuel Cell Workshop (2006)
- Leadership Excellence Certificate, (2006)
- Supervisory Skills Series Certificate, (2006)
- Teamwork Series Certificate, (2005)
- Time Management and Interviewer Certification (2005)
- Networking Effectively, (2005)
- Computational Fluid Dynamics (CFD) Training series (2002, 2003)
- GTA Certificate: Preparation for College Teaching Program, (2003)
- Short courses in developing superior research and teaching techniques at UCF (01-06)
- Certified Trainer of Trainers- by United Nations (UN) (2000)
- Certificate of Industrial Safety and Health Trainer, Tokyo-Japan, (1997)
- Professional Development Certificate Course Series, Jordan (1995-2000)

**RESEARCH EXPERIENCE**

**(a) Doctoral Dissertation (08/2001 – 05/2004)**

- Experimental, computational and analytical study of advanced cooling technology for high power-low density generators and motors
- Applying Computational Fluid Dynamics (CFD) techniques to study effect of Coriolis and centrifugal forces on turbulence and transport at high rotation and buoyancy numbers in complex geometries.
- Comparison between Eddy Viscosity (EVM) and Reynolds Stress (RSM) Turbulence Models in predicting

flow and heat transfer in rotating rib-roughened channels

**(b) Siemens Westinghouse Power Corporation (SWPC)/UCF Technical Collaboration Advanced Cooling / Flow Projects (CO-PI & project manager)** (May/2004 – present)

- Experimental Impingement Film Coupling Project (IFC-I), 2004-2005. (*Completed*)
- Development of Physics Based Cooling Feasibility Tool, 2004-2005. (*Completed*)
- Experimental Advanced cooling technology: Basic Film Cooling-II, 2005.
- Experimental Advanced cooling technology: Impingement Film Coupling-II, 2005.
- Experimental Shroud Film Cooling (SFC), 2004-2005. (*Completed*)
- Experimental Shroud Cooling Test (SCT), 2005

**Summary of Responsibilities:**

Project management. Conducting Experimental and Computational (CFD) research and development of Codes in heat transfer and fluid flow. Supervising research group of 4 PhD candidates, 2 MS and 3 undergraduate students. Responsible for overseeing day-to-day execution of the projects (including design, fabrication, scheduling, experimentation, CFD). Analyze and present results, and write reports. Assist the project group to stay technically aware of all related works, and to generate ideas for new research.

**(c) Electrodynamics Associates/UCF Advanced Heat Transfer-Mechanical Projects** (04/2002 – present)

- “Advanced cooling technology for high power-low density generator”, funded by US Air force through Electrodynamics Associates INC- 2002-2004. (**Research Assistant & project manager**). (*Completed*)
- “Thermal and Structural Analysis of Propulsion Motors”, funded by US Army through Electrodynamics Associates INC- 2005. (**Senior Investigator**). (*Completed*)
- “Integration of High Speed Compact Efficient Generator for DEW Applications”, (SBIR) funded by US Air force through Electrodynamics Associates INC- 2005-2007. (**CO-PI & project manager**)
- “Optimization of Thermal/Electrical/Control Design for Advanced Motor/Generator”. Funded by DOD SBIR Phase II (through Electrodynamics). (**CO-PI**)
- Performing CFD, Finite Element (FE), analytical and experimental analysis for several projects in the area of fluid flow, heat transfer and mechanical analysis for high speed rotating machines funded by several agencies. (**CO-PI & Senior Investigator**)

**(d) Siemens Power Generation (SPG)-Generator Group/UCF** (07/2005 – present)

- “Computational Fluid Dynamics Study for Design and Pressure Loss Reduction in the Omega Cooler”. (**Senior Investigator**).
- “Experimental Study for Design and Pressure Loss Reduction in the Omega Cooler”. (**CO-PI & Senior Investigator**).

**(e) NASA / SUS of Florida Turbine Initiative (SFTI), Transport Phenomena in Solid Oxide Fuel Cells**

(10/2006 – present)

- “Composite cathodes for Intermediate Temperature SOFCs: A comprehensive approach to designing materials for superior functionality”. (**CO-PI & Senior Investigator**).
- “Development of comprehensive transport models for SOFC”. (**CO-PI**).

**LANGUAGES**

- English, Arabic and Russian (Fluent in all three)

**PUBLICATIONS**

**(a) Journal papers**

1. A. K. Sleiti and J. S. Kapat, 2005, " Fluid Flow and Heat Transfer in Rotating Curved Duct at High Rotation and Density Ratios ", ASME Journal of Turbomachinery, Volume 127, Issue 4, pp. 659-667.
2. A. K. Sleiti and J. S. Kapat, 2006, " Effect of Coriolis and Centrifugal at High Rotation and Density Ratios", AIAA Journal of Thermophysics and Heat Transfer), Volume 20, No. 1, pp. 67-79.
3. R. Kumar, A. K. Sleiti and J. S. Kapat, 2006" *Unsteady Laminar Buoyant Flow Through Rectangular Vents in Large Enclosures*", AIAA Journal of Thermophysics and Heat Transfer, Vol. 20, No.2, pp. 276-284, April-June 2006.
4. A. K. Sleiti and J. S. Kapat, 2006 "An Experimental Investigation of Liquid Jet Array and Single Phase Spray Impingement Cooling Using Polyalphaolefin", Experimental Heat Transfer Journal, Volume 19, No. 2, pp. 149-163 April 2006.

5. A. K. Sleiti and J. S. Kapat, 2006" Comparison Between EVM and RSM Turbulence Models in Predicting Flow and Heat Transfer in Rotating Rib-Roughened Channels". Journal of Turbulence, Volume 7. No.29, pp. 1-21, 2006.
6. A. K. Sleiti and J. S. Kapat, 2006 " *Heat Transfer in Channels in Parallel-Mode Rotating at High Rotation Numbers* ", AIAA Journal of Thermophysics and Heat Transfer, Vol. 20, No.4, pp. 748-753, October-December 2006.
7. N R Nagaiah, A. K. Sleiti, S Rodriguez, J S Kapat, L. An and L. Chow, 2006 "A Novel Design and Analysis of a MEMS Ceramic Hot-Wire Anemometer for High temperature Applications". J. Phys.: Conf. Ser. 34, pp. 277-282.
8. A. K. Sleiti , 2007, "Advanced cooling technology for rotors of high-power low-duty cycle generators using polyalphaolefins" Journal of Synthetic Lubrication, Vol. 24, No.2, pp. 77-90, March 2007.
9. A. K. Sleiti and J. S. Kapat, 2007, " Effect of Coriolis and Centrifugal Forces on Turbulence and Heat Transfer at High Rotation and Buoyancy Numbers in Rib-Roughened Internal Cooling Channel", (accepted by International Journal of Thermal Sciences).
10. Quan Liu, A. K. Sleiti, and J. S. Kapat, "Application of Pressure and Temperature Sensitive Paints for Study of Local Heat Transfer to a Circular Impingement Air Jet" 2007, (accepted by International Journal of Thermal Sciences).

**(b) Journal papers (under review and to be submitted)**

1. A. K. Sleiti, N. Orlovskaya and J. S. Kapat "Computational and Experimental Study of High Performance Low Temperature Planar Solid Oxide Fuel Cell (SOFC) using  $\text{Sc}_2\text{O}_3\text{-CeO}_2\text{-ZrO}_2$  Electrolyte". Submitted to ASME Journal of Fuel Cell Science and Technology.
2. A. K. Sleiti and J. S. Kapat, " Review of Transport Phenomena in Solid Oxide Fuel Cells", (In preparation).
3. A. K. Sleiti " Effect of Vent Aspect Ratio on Unsteady Laminar Buoyant Flow Through Rectangular Vents in Large Enclosures", (Submitted to AIAA Journal of Thermophysics and Heat Transfer), 2007.
4. V. Krishnan, H. Zuniga, A. K. Sleiti and J. S. Kapat, "Discharge coefficient and effectiveness measurement for conical shaped film cooling holes" (Submitted to ASME Journal of Turbomachinery), 2007.

**(c) Conference papers**

1. A. K. Sleiti and J. S. Kapat, " *An Experimental Investigation of Liquid Jet Array and Single Phase Spray Impingement Cooling Using Polyalphaolefin* ", ASME International Mechanical Engineering Congress and RD&D Expo, IMECE2003-41754, Washington D.C. November, 2003.
1. A. K. Sleiti and J. S. Kapat, " *Effect of Coriolis and Centrifugal Forces on Turbulence and Transport at High Rotation and Buoyancy Numbers in Internal Cooling Smooth Channels* " ,42<sup>nd</sup> AIAA Aerospace Congress, AIAA-2004-1276, Reno-Nevada Jan. 04.
2. A. K. Sleiti and J. S. Kapat, " *Effect of Coriolis and Centrifugal Forces on Turbulence and Heat Transfer at High Rotation and Buoyancy Numbers in Rib-Roughened Internal Cooling Channel*", ASME Turbo Expo, GT2004-53018, Vienna, June 04.
3. A. K. Sleiti and J. S. Kapat, " *Fluid Flow and Heat Transfer Prediction in Curved Ducts at High Rotation and Buoyancy Numbers* ", ASME Turbo Expo, GT2004-53028, Vienna, June 04.
4. A. K. Sleiti and J. S. Kapat, " *Prediction of Flow Field and Heat Transfer in Channels in Parallel Rotating Mode at High Rotation and Buoyancy Numbers* ", 40<sup>th</sup> AIAA Fluid Dynamics Conference and Exhibit. AIAA-2004-2554, Portland, Oregon 28 June-July, 04.
5. A. K. Sleiti and J. S. Kapat, " Comparison Between EVM and RSM Turbulence Models in Predicting Flow and Heat Transfer in Rotating Rib-Roughened Channels". Proceedings of ASME Heat Transfer And Fluids Summer Conference, ASME paper HT-FED2004-56250, Charlotte, North Carolina, USA, July 11-15, 2004.
6. A. K. Sleiti and R. Kumar, " Effect of Vent Aspect Ratio on Unsteady Laminar Buoyant Flow Through Rectangular Vents in Large Enclosures", ASME International Mechanical Engineering Congress and RD&D Expo, IMECE2005-81604, Orlando, Florida, 2005.
7. Quan Liu, A. K. Sleiti and J. S. Kapat, "Application of Pressure and Temperature Sensitive Paints for Study of Local Heat Transfer to a Circular Impingement Air Jet", ASME International Mechanical Engineering Congress and RD&D Expo, IMECE2005-79214, Orlando, Florida, 2005.
8. V. Krishnan, H. Zuniga, A. K. Sleiti and J. S. Kapat, "Discharge coefficient and effectiveness measurement for conical shaped film cooling holes" ASME International Mechanical Engineering Congress and RD&D Expo IMECE2005-81713, Orlando, Florida, 2005.

9. Nagaiah, N. R., **Sleiti, A.K**, Rodriguez, S., Kapat, J. S., An, L., “*A Novel Design and Analysis of a MEMS Ceramic Hot-Wire Anemometer for High temperature Applications*”. Proceedings of IMEMS-2006, 9-12 May 2006, Singapore.
10. “Computational Fluid Dynamics Study of High Performance Low Temperature Planar Solid Oxide Fuel Cell (SOFC) using Sc<sub>2</sub>O<sub>3</sub>-CeO<sub>2</sub>-ZrO<sub>2</sub> Electrolyte”. Accepted by Fuel Cell Science, Engineering and Technology Conference, June 18 – 20, 2007, New York, USA.
11. “ A review of thermal and fluid management issues in Solid Oxide Fuel Cells”. Accepted by Fuel Cell Science, Engineering and Technology Conference, June 18 – 20, 2007, New York, USA
12. U. Kursun, **A. K. Sleiti** and J. S. Kapat, “NUMERICAL INVESTIGATION OF MICROSCALE SLOT JET IMPINGEMENT USING DSMC-IP AND CFD”, Proceedings of IMECE2007, 2007 ASME International Mechanical Engineering Congress and Exposition, November 11-15, 2007, Seattle, Washington, USA.

**(d) Technical Reports**

1. “Advanced cooling technology for high power-low density generator”, submitted to Electrodynamics Associates INC., May 2004
2. “Impingement Film Coupling Project (IFC-I)”, submitted to Siemens Westinghouse Power Corporation (SWPC) April 2005.
3. “Shroud Film Cooling Project”, submitted to Siemens Westinghouse Power Corporation (SWPC) August, 2005.
4. “Thermal and Structural Analysis of Propulsion Motors”, submitted to Electrodynamics Associates, May 2005.
5. “Computational Fluid Dynamics Study for Design and Pressure Loss Reduction in the Air Flow in the  $\Omega$  Cooler”, submitted to Siemens Westinghouse Power Corporation (SWPC), October 2005.

**REVIEWED PAPERS** (Reviewed total of 26 Journal and International Conference papers)

1. “Thermal design of heat exchangers with fins inside or/and outside tubes”, ASME Turbo Expo 2006, Barcelona, Spain, May 8-11, 2006.
2. “Condition monitoring of PEM fuel cell using Hotelling T2 control limit”, ASME paper IMECE2005, Orlando, Florida, November 5-11, 2005.
3. “ Flow Measurements in a First Stage Nozzle Cascade Having Leakage and Assembly Features: Effect of Endwall Steps and Leakage on Aerodynamics Losses”, ASME paper IMECE2005, Orlando, Florida, November 5-11, 2005.
4. “A Comparison of Approximate vs. Exact Geometrical Representations of Roughness for CFD Calculations of cf and St ”, ASME paper IMECE2005, Orlando, Florida, November 5-11, 2005.
5. “Flow Field and Heat Transfer Characteristics in an Impingement/Effusion Cooling System for Combustion Liner”, ASME Turbo Expo 2005, Paper GT2005, Reno, Nevada, USA, June 6-9, 2005.
6. “Effects of Fin Shapes and Arrangements on Heat Transfer for Impingement/Effusion Cooling with Crossflow”, ASME Turbo Expo 2005, Paper GT2005, Reno, Nevada, USA, June 6-9, 2005.
7. “Large Eddy Simulation of the Developing Region of a Stationary Ribbed Internal Turbine Blade Cooling Channel”, ASME Turbo Expo 2004, Paper GT2004, Vienna, Austria, June 14-17, 2004.
8. “A MEMS-Based Micro Heat Engine with Integrated Thermal Switch”, ASME paper IMECE2006, Chicago, IL, USA, November 5-10, 2006.

**SUMMARY OF RESEARCH GRANTS INCLUDING PENDING**

<b>Title of Project</b>	<b>Inclusive Dates</b>	<b>My Title</b>	<b>Funding Source</b>	<b>PI or Co-PI</b>	<b>Total Funding</b>
Integrated Thermal and Moisture Storage Systems to Reduce Peak Demand and Enhance Human Comfort	08/08-08/11 <b>Pending</b>	PI	“ <i>Florida Energy Systems Consortium</i> ”	Dr. S. A. Sherif Dr. M. Rahman Dr. M. Swami	\$600K
All-Perovskite Solid Oxide Fuel Cell System Operating on Biomass Derived Fuels for Energy Generation and Security	08/08-08/11 <b>Pending</b>	Co-PI	“ <i>Florida Energy Systems Consortium</i> ”	Dr. N. Orlovskaya Dr. J. Chung Dr. Moradov	\$1M
1416-RFP, DEVELOPMENT OF INTERNAL SURFACE CONVECTION CORRELATIONS FOR ENERGY AND	04/08-04/10 <b>Pending</b>	PI	ASHRAE	Prof. Jay Kapat	\$200K

LOAD CALCULATION METHODS”					
1387-RFP, “THERMAL ENERGY STORAGE DESIGN FOR EMERGENCY COOLING”	04/08-04/10 <b>Pending</b>	PI	ASHRAE	Prof. Jay Kapat	\$150K
1418-RFP, “OPTIMIZING THE TRADE OFF BETWEEN GRID RESOLUTION AND SIMULATION ACCURACY: COARSE GRID CFD MODELING”	04/08-04/10 <b>Pending</b>	PI	ASHRAE	Prof. Jay Kapat	\$120K
1456-RFP, “ASSESS AND IMPLEMENT NATURAL AND HYBRID VENTILATION MODELS IN WHOLE-BUILDING ENERGY SIMULATIONS”	04/08-04/09 <b>Pending</b>	PI	ASHRAE	Prof. Jay Kapat	\$140K
Composite cathodes for Intermediate Temperature SOFCs: A comprehensive approach to designing materials for superior functionality	03/08-12/10 <b>Pending</b>	Co-PI	NETL	Dr. N. Orlovskaya	\$600K
Intermediate Temperature SOFCs: A comprehensive approach to designing materials for superior functionality	03/07-03/08 <b>Current</b>	Co-PI	NASA	Dr. N. Orlovskaya	\$130K
Collaborative Research of Experimental Investigation and Multi-Scale Based Modeling and Simulation of Solid Oxide Fuel Cells	03/07-03/07	Co-PI	NASA	Dr. J. Chung	\$110K
High-Temperature Ceramic Micro-Sensors for Aerospace Applications Based on Polymer-Derived Ceramics	03/08-03/10 <b>Pending</b>	Co-PI	NASA	Dr. L. An	\$75K
High-Temperature Ceramic Micro-Sensors for Aerospace Applications	03/08-12/10 <b>Pending</b>	Co-PI	NSF	Dr. L. An	\$260K
Optimization of Thermal/Electrical/Control Design for Advanced Motor/Generator	12/05–11/07 <b>Completed</b>	Co-PI	AFRL SBIR II, Electrodynamic	Prof. Jay Kapat	\$150K
Computational Fluid Dynamics Study for Design and Pressure Loss Reduction in the Omega Cooler - Phase I.	07/05–11/05 <b>Completed</b>	Senior Investigator	Siemens Power Generation (SPG)/ Generator	Prof. R. Chen	\$25K
Integration of High Speed Compact Efficient Generator for DEW Applications, and more	01/05–08/05 <b>Completed</b>	Senior Investigator	DOD (Air Force) - Electrodynamic	Prof. Jay Kapat	\$70k
Impingement Film Coupling Project – Phase I (IFC-I)	02/04–05/05 <b>Completed</b>	Senior Investigator & Project manager	Siemens Power Generation (SPG / Gas Turbine	Prof. Jay Kapat	\$65K
Development of Physics Based Cooling Feasibility Tool	04/04–02/05 <b>Completed</b>	Senior Invest. & Project manager	Siemens Power Generation (SPG)	Prof. Jay Kapat	\$35K
Advanced cooling technology: Basic Film Cooling- Phase II,	03/05–03/06 <b>Completed</b>	Senior Investigator & Project manager	Siemens Power Generation (SPG / Gas Turbine	Prof. Jay Kapat	\$89K
Impingement Film Coupling Project – Phase II (IFC-II)	03/05–03/06 <b>Completed</b>	Senior Investigator & Project manager	Siemens Power Generation (SPG / Gas Turbine	Prof. Jay Kapat	\$115K
Shroud Film Cooling, Shroud Cooling Test (SCT)	08/04–11/05 <b>Completed</b>	Senior Investigator & Project manager	Siemens Power Generation (SPG / Gas Turbine	Prof. Jay Kapat	\$125K
Shroud Film Cooling, Shroud Cooling Test (SCT)	03/05–02/06 <b>Completed</b>	Senior Investigator & Project manager	Siemens Power Generation (SPG / Gas Turbine	Prof. Jay Kapat	\$77K
Advanced cooling technology for high Power-low Density Generator	01/02 – 02/04 <b>Completed</b>	Research Assistant	US Air force through Electrodynamic	Prof. Jay Kapat	\$135K