

2016 Engineering Research Forum



Final Outcomes Report

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and Graduate Studies; Ms. Paulina Alvarado,
Assistant Director for Research and Graduate Studies



EXECUTIVE SUMMARY

The inaugural 2016 Engineering Research Forum was organized by the UTEP College of Engineering Dean's Office, Associate Dean for Research & Graduate Studies, Dr. Anupama Kaul and Assistant Director for Research & Graduate Studies, Ms. Paulina Alvarado, with the guidance from Dean Dr. Carlos Ferregut. The objective of the forum was to provide an opportunity for the Interdisciplinary Research Seed (IRS) fund awardees to share their research findings with the rest of the engineering community. It was also an opportunity to learn about how this fund enabled the awarded teams to position them for additional and potentially larger funding opportunities in the future. The intent of the IRS fund is to encourage collaborative activities across departments in the college, and to bridge traditional disciplinary boundaries, and as was evident from the presentations at the forum, the fund succeeded in achieving some of these objectives. Expanding interdisciplinary research activities, particularly as they align with federal funding initiatives that are targeted to address pressing societal grand challenges, is becoming increasingly important to enhance research growth. Through this seed fund, the hope was for the faculty to a) establish working partnerships that may otherwise not be possible, and b) to enable them to gather the critical "preliminary data". These two factors would then serve the teams to position them well for potentially larger federal (or private) grants in the future. While the university-wide IDR fund can involve faculty across colleges, the IRS fund is specifically targeted to enhance interdisciplinary activities within the College of Engineering.

The College has awarded the IRS fund for approximately 1.5 years now, since its first launch in May 2015, with three rounds of competitions hosted. For the first batch of awardees the durations of the projects were from approximately May until August end at a funding of approximately \$6 K for three teams, while in the second and third round of awards, the funding level was \$14 K for 8 months (two teams), and \$20 K for 10 months (two teams), respectively. The feedback received on this fund from the faculty who attended the forum, was that they were appreciative such an opportunity was provided to them so they could embark on the proposed work, which would prepare them better to compete more meaningfully on larger awards to federal funding agencies. Some teams showcased publications that emerged from this fund, while others demonstrated an upgrade in the lab equipment and infrastructure spurred by this fund. It was noted that in some instances it was challenging for the faculty to recruit appropriate students who could embark on the research.

Besides the IRS awardee presentations that were scheduled for one of the sessions in this inaugural Engineering Research Forum, two additional sessions were also created. The first was for Postdoctoral Scholars in the College, and the second was for New Tenure-track faculty in the college. Eight post-doctoral scholars presented an overview of their research and provided feedback in regards to their research experience at UTEP. A question that came up during the break-out discussion involving the Postdoctoral Scholars was their decision in choosing UTEP to pursue their research, especially since some of the postdoctoral scholars present had already

obtained some or all of their prior degrees from UTEP. The responses received ranged from the scholars choosing UTEP for personal reasons to be close to their families, while others chose UTEP since UTEP truly allowed them to pursue the best possible research in their respective areas. An additional point that was brought up during the discussion by one of the postdoctoral scholars was the need for awards. While Ph.D. students are considered for the “Outstanding Dissertation Awards” through a college-wide committee formulated from all of the seven departments, to form a similar such committee to evaluate postdoctoral scholars in the College is deemed impractical given the floating nature of appointments, where appointments can range from less than one year to more than several years. Moreover, such a recognition system for postdoctoral scholars is virtually nonexistent at other National or Tier One Research Universities. It is widely accepted and well understood that the best recognition for postdoctoral scholars is through excellence in their research publications, a universal metric to gauge the impact of their research that can thus prepare them most effectively for the next steps in their careers. The college is looking into ways in which there can be mechanisms in place to provide support to postdoctoral scholars to attend Career Development Workshops, Proposal Writing Workshops, and important conferences that can positively influence the process in which they establish themselves as independent researchers in preparation for the next steps in their careers.

The last session was targeted toward tenure-track faculty who conveyed their gratefulness to the College and the University for allowing them to be a part of the academic community and instruct students from this Paseo Del Norte region.

In general, this first Engineering Research Forum was well received by the engineering faculty, students and staff who attended the event. It was suggested that such an event would be a welcome change if it were to be held on a regular (annual) basis sometime in the late Fall to help bring together researchers from within the College. We would like to thank all of the speakers and participants who made this Forum possible.



College of Engineering

Engineering Research Forum

December 5th, 2016, 12:00 PM – 5:00 PM

Location: Union Building (University Suite Rm. 312)

<p>12:00 PM 12:50 PM</p>	<p>Lunch</p>	
<p>12:50 PM</p>	<p><u>OPENING REMARKS</u></p>	<p>Dr. Carlos Ferregut Interim Dean</p> <p>Dr. Anupama Kaul Assoc. Dean Research & Graduate Studies</p>
<p>1:00 PM 3:15 PM</p>	<p><u>SESSION I</u></p> <p>Interdisciplinary Research Seed (IRS) Fund Project Team Presentations <i>(25 min. overview on research provided by each IRS Team)</i></p>	<p>Session Chair: Dr. Thomas Davis <i>CE</i></p>
<p>2014-2015 Awardees</p>		<p>Presenters</p>
<p>1:00 PM</p>	<p>Team 1 Hyperspectral Remote Sensing for Nitrogen Management</p> <p>Dr. Miguel Velez-Reyes & Dr. Ivonne Santiago</p>	<p>Dr. Miguel Velez-Reyes <i>ECE</i></p>
<p>1:25 PM</p>	<p>Team 2 Distributed Intrusion Detection and Cyber Security For Smart Grid</p> <p>Dr. Paras Mandal & Dr. Bill Tseng</p>	<p>Dr. Paras Mandal <i>ECE</i></p>

1:50 PM	<p align="center">Team 3 Bioprinting of Human Induced Pluripotent Stem Cells to Facilitate Embryoid Body Formation and targeted Differentiation in Vitro</p> <p align="center">Dr. Binata Joddar & Dr. Thomas Boland</p>	<p align="center">Dr. Binata Joddar <i>MMBME</i> Gilbert Paquian <i>PhD student</i></p>
2015-2016 Awardees		
2:15 PM	<p align="center">Team 1 An Integrated Mechanical Testing and Characterization System for Thin-Engineered Materials Subjected to Ultra-High-Cycled Fatigue</p> <p align="center">Dr. Calvin Stewart & Dr. Deidra Hodges</p>	<p align="center">Dr. Calvin Stewart <i>ME</i></p>
2:40 PM	<p align="center">Team 2 HifoCap: A Wearable System for Detecting High Frequency Oscillations in EEGs of the Human Brain</p> <p align="center">Dr. Rodrigo Romero, Dr. Sergio Cabrera & Dr. Yoonsik Cheon</p>	<p align="center">Dr. Rodrigo Romero <i>ECE</i></p>
3:05 PM	IRS Awardees to provide feedback on the IRS initiative	
3:15 PM	Coffee Break/Group Photo	
3:30 PM 4:20 PM	<p align="center"><u>SESSION II</u></p> <p align="center"><i>Postdoctoral Scholars/Research Scientists in Engineering</i> (5 min. overview on research provided by each scholar below)</p>	<p align="center">Session Chair: Dr. Jeffrey Weidner <i>CE</i></p>
3:30 PM	Next generation exascale capable CFD solver for complex multiphase flows	<p align="center">Dr. VM Krushnarao Kottedda Advisor: Dr. Vinod Kumar <i>ME</i></p>
3:35 PM	Building Rapport with Embodied Conversational Agents in Immersive Applications	<p align="center">Dr. Ivan Gris Sepulveda Advisor: Dr. David Novick <i>CS</i></p>
3:40 PM	Constrained Optimization for Joint Inversion of Geophysical Datasets	<p align="center">Dr. Azucena Zamora Advisor: Dr. Ann Gates <i>CyberShare, CS</i></p>
3:45 PM	Use of Geocells in Pavement Design	<p align="center">Dr. Sundeep Inti Advisor: Dr. Vivek Tandon <i>CE</i></p>

3:50 PM	Next generation biomaterials for the orthopedic applications.	Dr. Alok Kumar Advisor: Dr. Devesh Misra <i>MME</i>
3:55 PM	Stress Induced Raman Spectroscopy In two-dimensional Superconducting Niobium Diselenide	Dr. Chandan Biswas Advisor: Dr. Anupama Kaul <i>ECE</i>
4:00 PM	New routes to functionalization of 2D materials and their related applications	Dr. Misook Min Advisor: Dr. Anupama Kaul <i>ECE</i>
4:05 PM	2D Materials for Solar Cell Application	Dr. Nirmal Adhikari Advisor: Dr. Anupama Kaul <i>ECE</i>
4:10 PM	Postdocs to provide feedback and highlights on their UTEP experience	
4:20 PM 4:40 PM	<u>SESSION III</u> <i>New Tenure-Track Faculty</i> <i>(15 min. overview on research provided by each Faculty below)</i>	Session Chair: Dr. Deidra Hodges <i>ECE</i>
4:20 PM	High-Performance Computing with GPUs	Dr. Rodrigo Romero <i>ECE</i>
4:35 PM	What Role Can Technology Play in Management of Civil Infrastructure?	Dr. Jeffrey Weidner <i>CE</i>
4:50 PM	New Faculty to provide feedback on their experience settling in at UTEP	
5:00 PM	CLOSING	

List of Attendees

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