

## 10<sup>TH</sup> Annual Capstone Design and Graduate Research Conference

April 25, 2014  
The Hilton UH Hotel & Conference Center  
Houston, Texas

### Program

8:30 - 8:55 am	Registration, Waldorf Astoria Room 210, Lobby
8:55 - 9:00 am	Opening Ceremonies, Plaza Room 247 <ul style="list-style-type: none"><li>• Opening Remarks by Dr. Pauline Markenscoff, Conference Chair</li><li>• Welcome to Technical Sessions by Dr. Wanda Wosik</li></ul>
9:00 - 10:00 am	Technical Program - Oral Session A, Plaza Room 247
10:00 -10:30 am	Remarks <ul style="list-style-type: none"><li>• Dr. Dmitri Litvinov, Vice Provost, Dean of Graduate School</li><li>• Dr. Joe Tedesco, Dean, College of Engineering</li><li>• Dr. Badri Roysam, Chairman, ECE Department</li></ul>
10:30 - 10:45 am	Coffee Break, Waldorf Astoria Room 210, Lobby
10:45- 11:30 am	Technical Program - Oral Session B, Plaza Room 247
11:30- 12:30 pm	Lunch, Waldorf Astoria Room 210
12:30 - 1:00 pm	Plenary Presentation “EUCLID, BIGGERS, AND SCHLUMBERGER” by Steven Gomez, Mechanical Metier Manager Schlumberger, Waldorf Astoria Room 210
1:00 - 3:00 pm	Technical Program - Poster Session C, Conrad Ballroom
3:00 – 4:00 pm	Technical Program - Oral Session D, Plaza Room 247
4:00 - 4:15 pm	Coffee Break, Waldorf Astoria Room 210, Lobby
4:15 - 5:15 pm	Technical Program - Oral Session E, Plaza Room 247
5:15 - 5:45 pm	Elevator Talks by CDC students, Waldorf Astoria Room 210
5:45 - 7:00 pm	Awards Ceremony and Alumni Mixer Reception, Waldorf Astoria Room 210

# **GRC 2014 TECHNICAL PROGRAM**

**The Hilton UH Hotel & Conference Center**

**April 25, 2014**

**8:30 – 8:55 am** Registration, Waldorf Astoria Room 210, Lobby

**8:55 – 9:00 am** Opening Remarks in Plaza Room 247

## **Session A: Neural Sensing and Brain Control at Macro- to Nano-Scale**

**Session Type: Oral**

**Time: 9:00 – 10:00 am**

**Faculty Chair: Dr. Haluk Ogmen**

**9:00 – 9:15 am** **BRAIN MACHINE INTERFACE CONTROL OF A THERAPEUTIC EXOSKELETON**  
Nikunj A. Bhagat\*, James French, Anusha Venkatakrisshnan, Nuray Yozbatiran, Gerard E. Francisco, Marcia K. O'Malley, and Jose L. Contreras-Vidal

**9:15 – 9:30 am** **CONTRIBUTIONS OF ENDOGENOUS AND EXOGENOUS REFERENCE FRAMES TO PERCEPTION OF MOTION DIRECTION**  
Mehmet N. Agaoglu\*, Michael Herzog, and Haluk Ogmen

**9:30 – 9:45 am** **A RELIABLE, HIGH THROUGHPUT APPROACH FOR FABRICATION OF OPTRODES FOR OPTOGENETIC STUDIES IN PRIMATES**  
Apeksha Awale\*, Mufadal Gheewala, Pratik Motwani, Wei-Chuan Shih, G. Purushothaman, and John C. Wolfe

**9:45 – 10:00 am** **COMPREHENSIVE COMPUTATIONAL ANALYSIS OF TISSUE REMODELING IN THE RAT BRAIN AFTER TRAUMATIC INJURY**  
Kedar Grama\*, Yanbin Lu, Murad Megjhani, and Badri Roysam

**10:00 – 10:30 am** **Welcoming Remarks and Addresses in Plaza**

- Dr. Dmitri Litvinov, Vice Provost, Dean of Graduate School
- Dr. Joe Tedesco, Dean, College of Engineering
- Dr. Badri Roysam, Chairman, ECE Department

**10:30 – 10:45 am** **Coffee Break**

\* means Student Presenter.

## **Session B: Optical and Magnetic Effects Enhanced by Nanoparticles in Medical Diagnostics and Intervention**

**Session Type: Oral**

**Time: 10:45 – 11:30 am**

**Faculty Chair: Dr. Joe Charlson**

- 10:45 – 11:00 am**     **IMPROVEMENT OF TISSUE ANALYSIS AND CLASSIFICATION USING OPTICAL COHERENCE TOMOGRAPHY COMBINED WITH RAMAN SPECTROSCOPY**  
Chih-Hao Liu\*, Ji Qi, Shang Wang, Chen Wu, Wei-Chuan Shih, and Kirill V. Larin
- 11:00 – 11:15 am**     **MONOLITHIC NANOPOROUS GOLD NANOPARTICLES**  
Fusheng Zhao\*, Jianbo Zeng, and Wei-Chuan Shih
- 11:15 – 11:30 am**     **MANIPULATION OF NANOPARTICLES USING AC MAGNETIC FIELDS TO TRIGGER TUMOR CELL APOPTOSIS**  
Dhivya Ketharnath\* Leiming Xie, Biana Godin, and Jarek Wosik
- 11:30 – 12:30 pm**     **Lunch**, Waldorf Astoria Room 210
- 12:30 – 1:00 pm**     **Plenary Presentation “EUCLID, BIGGERS, AND SCHLUMBERGER” by Steven Gomez, *Mechanical Metier Manager Schlumberger*, Waldorf Astoria Room 210**

## **Session C: POSTER PRESENTATIONS**

**Time: 1:00 – 3:00 pm**

**Faculty Chairs: Dr. Jack Wolfe and Dr. Zhu Han**

### ***Session P1: Imaging for Biomedical Applications***

#### **UNSUPERVISED DISCOVERY OF SUBSPACE TRENDS IN HIGH DIMENSIONAL DATA**

Yan Xu\*, Peng Qiu, and Badri Roysam

#### **COMPREHENSIVE QUANTITATIVE PROFILING OF BRAIN CYTOARCHITECTURAL ALTERATIONS CAUSED BY BINGE ALCOHOL**

Prathamesh Kulkarni\*, Leigh Leasure, Emily Barton, William Shain, Yanbin Lu, Yan Xu, Murad Megjhani, and Badrinath Roysam

\* means Student Presenter.

**PREDICTIVE MODELING OF THE FEMALE TORSO DURING  
BREAST RECONSTRUCTION**

Audrey Cheong\* and Fatima Merchant

**DEEP IMAGING OF MOUSE EMBRYOS BY  
ROTATIONAL OCT**

Narendran Sudheendran, Chen Wu\*, Irina V. Larina, Mary E. Dickinson, and Kirill V. Larin

**SHEAR WAVE IMAGING OPTICAL COHERENCE  
TOMOGRAPHY (SWI-OCT)**

Shang Wang\* and Kirill V. Larin

*Session P2: Applied Electromagnetics: Antennas, Materials, and Characterization*

**AN INVESTIGATION OF MULTIBAND FABRY-PÉROT  
RESONANT CAVITY ANTENNAS**

Krishna Kota\*, David R. Jackson, and Stuart A. Long

**EXAMINATION OF RADIATION FROM 2D PERIODIC  
LEAKY-WAVE ANTENNAS**

Sohini Sengupta\*, David R. Jackson, and Stuart A. Long

**MICROWAVE CHARACTERIZATION OF YBCO FILMS  
ON RIGID AND FLEXIBLE SUBSTRATES**

Kuang Qin\*, Dhivya Ketharnath, Eduard Galstyan, Venkat Selvamanicka, and Jarek Wosik

*Session P3: Cognitive and Noninvasive Biosensing Including BioMEMS and Materials*

**PROCESSING MOTION INFORMATION VIA THE NON-  
FIXATING EYE IN MONKEYS WITH STRABISMUS**

Sevda Agaoglu\*, Mehmet Agaoglu, V. E. Das, and Haluk Ogmen

**AIR-PUFF OCE FOR ASSESSMENT OF MOUSE  
CORNEA *IN VIVO***

Jiasong Li\*, Shang Wang, Manmohan Singh, Salavat Aglyamov, Stanislav Emelianov, Michael Twa, and Kirill V. Larin

**MICROFLUIDIC LABEL-FREE MONITORING OF DNA  
HYBRIDIZATION**

Ji Qi\*, Jianbo Zeng, Fusheng Zhao, Steven Hsesheng Lin, Uli Strych, Richard C. Willson, and Wei-Chuan Shih

**MULTI-FUNCTIONAL NANOPOROUS FILTER FOR  
TYLENOL AND UREA SENSING IN URINE**

Yulung Sung\*, Fu-Sheng Zhao, and Wei-Chuan Shih

*Session P4: Wireless Energy Transmission, Communication, and Power Solutions*

**AN ADAPTIVE MAXIMUM POWER POINT TRACKING  
ALGORITHM FOR WIND ENERGY CONVERSION  
SYSTEMS**

Wajiha Shireen and Shyam Jakiraman\*

**WIRELESS ENERGY TRANSMISSION FOR  
GEOPHYSICAL APPLICATIONS**

Xiyao Xin\*, David Jackson, Ji Chen, and Paul Tubel

**ENSEMBLE MULTIPLE KERNEL ACTIVE LEARNING FOR  
CLASSIFICATION OF MULTI-SOURCE REMOTE SENSING  
DATA**

Yuhang Zhang\* and Saurabh Prasad

**TIME-REVERSAL PPM FOR STRESS WAVE  
COMMUNICATIONS IN SOLID STRUCTURES**

Qing Ji\*, Rong Zheng, Zhi Ding, and Gangbing Song

*Session P5: Networking; Theoretical and Practical Solutions*

**SOCIAL NETWORK AWARE DEVICE-TO-DEVICE  
COMMUNICATION IN WIRELESS NETWORKS**

Yanru Zhang\*, Erte Pan, and Zhu Han

**NON-PARAMETRIC BAYESIAN LEARNING FOR  
INFERRING HIDDEN  
CAUSES WITH POTENTIALLY INFINITE LAYERS**

Erte Pan\* and Zhu Han

**A DISTRIBUTED PARALLEL APPROACH FOR BIG  
DATA SCALE OPTIMAL POWER FLOW WITH  
SECURITY CONSTRAINTS**

Lanchao Liu\* and Zhu Han

**DYNAMIC ASYMMETRIC SCHEDULING FOR EDGE  
ROUTERS IN RECONFIGURABLE ASYMMETRIC  
OPTICAL BURST SWITCHING NETWORKS**

Linsen Wu\*, Chenxing Ma\* and Yuhua Chen

*Session P6: Materials, Devices, and Technology at Micro- and Nanoscale*

**REACTION KINETICS OF SURFACE LIMITED REDOX  
REPLACEMENT OF LEAD UPD STUDIED BY SURFACE  
REFLECTIVITY AND CONVENTIONAL ELECTROCHEMICAL  
METHODS**

Ela Bulut\* and Stanko R. Brankovic

**THE SIMULATION OF ESAKI TUNNELING DIODE I-V  
CHARACTERISTICS AND STUDY OF PARAMETERS  
IMPROVING THE DEVICE ELECTRICAL BEHAVIOR**

Kaveh Shervin\* and Alex Freundlich

**LASER-ASSISTED DEALLOYING LITHOGRAPHY**

Jingting Li\* and Wei-Chuan Shih

**NON-INVASIVE RAPID THERMAL ANNEALING OF  
NANOPOROUS GOLD DISKS (NPGDs)**

Md Masud Parvez Arnob\* and Wei-Chuan Shih

**ENHANCEMENT OF EPIR SWITCHING  
CHARACTERISTICS OF PCMO RERAM USING  
OXYGEN DEFICIENT  $Al_2O_x$  DIFFUSION BARRIER**

R. Mithun Kumar\*, Rabi Ebrahim, and Alex Ignatiev

**Session D: Antenna, Networks, and Power Systems**

**Session Type: Oral**

**Time: 3:00 – 4:00 pm**

**Faculty Chair: Dr. Ji Chen**

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| <b>3:00 – 3:15 pm</b> | <b>A CYLINDRICAL DIELECTRIC SURFACE-WAVE ANTENNA</b><br>Nicholas A. Boggs*, Stuart A. Long, and David R. Jackson  |
| <b>3:15 – 3:30 pm</b> | <b>SMART CHARGING FACILITIES FOR PLUG IN HYBRID ELECTRIC VEHICLES IN A DC MICROGRID</b><br>Preetham Goli* and Wajiha Shireen                                      |
| <b>3:30 – 3:45 pm</b> | <b>POWER SYSTEM ASSET MANAGEMENT FOR HURRICANE-PRONE INFRASTRUCTURE DAMAGES</b><br>Ali Arab*, Amin Khodaei, Suresh K. Khator, and Zhu Han                         |
| <b>3:45 – 4:00 pm</b> | <b>SUB-MILLISECOND DYNAMIC OPTICAL PATH SETUP IN DWDM MULTI-MODE SWITCHING NETWORKS</b><br>Wenhao Chen*, Lei Wang, Dmitriy Chenchykov, Linsen Wu*, and Yuhua Chen |

\* means Student Presenter.

**4:00 – 4:15 pm      Coffee Break**

**Session E: Basic and Material Science for New Devices and  
Technology Development**

**Session Type: Oral**

**Time: 4:15 – 5:15 pm**

**Faculty Chair: Dr. Stanko Brankovic**

**4:15 – 4:30 pm      MODELING AND FABRICATION OF GaAs SOLAR CELLS WITH  
HIGH DISLOCATION TOLERANCE**

Akhil Mehrotra\*, W. Wang, and Alex Freundlich

**4:30 – 4:45 pm      RAMAN AND PHOTOLUMINESCENCE SPECTROSCOPY  
OF CVD SYNTHESIZED SINGLE CRYSTAL WS<sub>2</sub>**

Su-Chi Chang\*, Yanan Wang, R Mithun Kumar, Rabi Ebrahim,  
Viktor Hadjiev, Alex Ignatiev, Jiming Bao, and Shin-Shem Pei

**4:45 – 5:00 pm      THE UNDER POTENTIAL DEPOSITION of Pb on Ru(0001)**

Dongjun Wu\*, Qiuyi Yuan, and Stanko R. Brankovic

**5:00 – 5:15 pm      SODIUM ION INTERCALATION FOR 2-D MATERIALS AS  
ADVANCED BATTERIES**

Yifei Li\*, Yanliang Liang, Hyundeog Yoo, and Yan Yao

**5:15– 5:45 pm      Elevator Talks by CDC Students, Waldorf Astoria Room 210**

**5:45 – 7.00 pm      Awards Ceremony and Alumni Mixer Reception, Waldorf  
Astoria Room 210**

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