



University of California – San Diego

La Jolla, California 92093-0401

Research Review & Advisory Council Meeting

May 18-19, 2017

Website: <http://cmrr.ucsd.edu>



Research Review Schedule

Thursday, May 18, 2017

8:30 AM - Continental Breakfast at CMRR

8:55 AM - Welcome and Introduction

9:00 AM – Tribology & Mechanics
Professor Frank Talke

1	Tip Enhanced Raman Spectroscopy Investigations at CMRR	<i>Benjamin Suen</i>
2	Tip and Surface Enhanced Raman Spectroscopy Studies on Tailored Carbon Coatings	<i>Andreas Rosenkranz</i>
3	Simulation of Laser Heating in HAMR Using Molecular Dynamics Simulations	<i>Young Seo</i>
4	Tribo Chemistry and Voltage Biasing of the Head Disk Interface	<i>Tan Trinh</i>

10:00 AM - 10 Minute Break

5	Development of an Intraocular Pressure Measurement System	<i>Alex Phan</i>
6	Design of an Interferometric Pressure Sensor for Keratoprosthesis and Intraocular Lens Implants	<i>Phuong Truong</i>
7	3-D Printing Endoscopes: The Esophageal Deflection Device	<i>Karcher Morris</i>
8	3-D Printed Endoscopes with Elevator Design	<i>Lars Ringel</i>
9	3D Printing Endoscopes: Shape Memory Alloy and Other Actuation	<i>Anay Pandit</i>

11:30 AM – Magnetic Films and Nanostructures
Professor Eric E. Fullerton

10	Observation of DMI and Skyrmions in Pt/Co/Os/Pt Thin Films	<i>Robert Tolley</i>
11	Magnetic Phase Dependent Detection of Laser-Induced THz-emission in FeRH	<i>Raj Medapalli</i>
12	Interplay of Ferromagnetism and Superconductivity in Ni Nanowires with Nb Leads	<i>Haowen Ren</i>

12:15 PM – Lunch – CMRR Lobby		
1:15 PM – Special Session <i>Goran Mihajlovic, Western Digital</i>		
13	Spin Orbit Torque Switching of CoFeB Magnetic Free Layer with Pt and Ta Heavy Metals	<i>Goran Mihajlovic</i>
2:00 PM – Non-Volatile Solid State Memory <i>Professor Steven Swanson</i>		
14	NOVA: A High-Performance, Hardened File System for Non-Volatile Main Memories	<i>Lu Zhang</i>
2:30 PM – Nanoscale Dynamics and Structure of Materials <i>Professor Oleg Shpyrko</i>		
15	Photo Induced Enhancement of the Charge Density Wave Amplitude in Antiferromagnetic Chromium	<i>Andrej Singer</i>
3:00 PM - 10 Minute Break		
3:10 PM – Thermal Energy Transport <i>Professor Renkun Chen</i>		
16	Thermal Conductivity Reduction of Tungsten Plasma Facing Materials due to Helium Plasma and Cu ²⁺ ion Irradiation	<i>Shuang Cui</i>
16	Magnetocaloric Materials	<i>Eunjeong Kim</i>
3:50 PM – Micromagnetic Modeling & Recording Physics <i>Professor Vitaliy Lomakin</i>		
17	Calculating Energy Barriers, Attempt Frequencies, and Current Dependence in MRAM	<i>Majd Kuteifan</i>
18	Coupled Magnetoquasistatic Electromagnetic - Micromagnetic Solver for the Modeling of Eddy Current Effects	<i>Simon Couture</i>
19	Integrating FastMag with NGSPICE Framework	<i>Iana Volvach</i>
19	GPU Computing Applied to Computational X-Ray Imaging	<i>Xueyang Wang</i>
5:10 PM - Poster Session/Schultz Prize		
6:00 PM - Advisory Council Meeting		

Friday, May 19, 2017

8:30 AM - Continental Breakfast at CMRR

8:55 AM - Welcome and Introduction

9:00 AM – Signal Processing & Coding

Professor Paul H. Siegel

20	Generalized Weighted Sum Subtract Joint Detection for 3H2T System	<i>Bing Fan</i>
21	Generalized Partial Orders for Polar Code Bit-Channels	<i>Wei Wu</i>
22	Permuted Successive Cancellation Decoding for Polar Codes	<i>Sarit Buzaglo</i>
23	Syndrome-Coupled Design of Rate-Compatible Error Correcting Codes	<i>Pengfei Huang</i>

10:20 AM - 10 Minute Break

24	Optimal Distribution Matching Code Design	<i>Yi Liu</i>
25	On the Mutual Information Rate and Capacity of Flash Memory Channels with Inter-Cell Interference	<i>Yonglong Li</i>

11:10 AM – Special session

Jean Anne C. Incorvia, Stanford University

26	Non Volatile Hybrid CMOS-MRAM Circuits Using Three-terminal Spin Orbit Torques Switches for Normally-Off Computing	<i>Jean Anne Incorvia</i>
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11:50 AM – Magnetism & Spin-Transport in Nanostructured Materials

Professor Kai Liu, UC Davis

27	Magnetic Yoking and Tunable Interactions in FePt-Based Hard/Soft Bilayers	<i>Kai Liu</i>
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12:30 PM – Lunch – CMRR Lobby