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# Fundamentals of Chemical and Physical Change at Surfaces and Interfaces

July 30 - August 4, 2017

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## Chair

Eckart Hasselbrink

## Vice Chair

Axel Gross

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## Salve Regina University

100 Ochre Point Avenue

Newport, RI, US

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## Conference Description

The Gordon Research Conference on Dynamics at Surfaces focuses on a molecular level understanding of the elementary chemical reactions and physical processes occurring at surfaces. It brings together the leading experimental and theoretical researchers studying the behavior of molecules interacting with liquid and solid surfaces, as well as phenomena at the liquid-solid interface. Examples of featured topics include: energy conversion processes at interfaces; dynamics of heterogeneous catalysis; dynamics at polymer, membranes and biological interfaces; growth and self-assembly at surfaces; computational approaches to dynamics at surfaces, ultrafast electron dynamics at interfaces, state-to-state scattering, chemical reaction dynamics, non-adiabatic effects in reactive and inelastic scattering of molecules from surfaces, single molecule dynamics at surfaces, surface photochemistry, processes at the surfaces of electrodes and dynamics at soft (e.g. water) interfaces. The conference brings together investigators from a variety of scientific disciplines including chemistry, physics, materials science, geology, biophysics, and astrochemistry. The conference will be preceded by a Gordon Research Seminar for young researchers (graduate students and post-docs).

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## Related Meeting



This GRC will be held in conjunction with the "Dynamics at Surfaces (GRS)" Gordon Research Seminar (GRS). Those interested in attending both meetings must submit an application for the GRS in addition to an application for the GRC. Refer to the [associated GRS program page](#) for more information.

## Conference Program

Sunday	
2:00 pm - 9:00 pm	Arrival and Check-in
6:00 pm - 7:00 pm	Dinner
7:30 pm - 7:40 pm	Introductory Comments by GRC Site Staff / Welcome from the GRC Chair
7:40 pm - 9:30 pm	<b>From Surface Dynamics to Heterogeneous Catalysis</b> Discussion Leader: <b>Geert-Jan Kroes</b> (Leiden University, The Netherlands)
7:40 pm - 8:20 pm	<b>Miquel Salmeron</b> (Lawrence Berkeley National Laboratory, USA) "The Solid-Gas and Solid-Liquid Interface Structure and Dynamics: 21 <sup>st</sup> Century Challenges"
8:20 pm - 8:35 pm	Discussion
8:35 pm - 9:15 pm	<b>George Schatz</b> (Northwestern University, USA) "CO <sub>2</sub> and N <sub>2</sub> Reduction: New Directions"
9:15 pm - 9:30 pm	Discussion
Monday	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	<b>Dynamics of Chemical Reactions at Surfaces</b> Discussion Leader: <b>Sylvia Ceyer</b> (Massachusetts Institute of Technology, USA)
9:00 am - 9:40 am	<b>Fabio Busnengo</b> (CONICET / Universidad Nacional de Rosario, Argentina) "Dissociative Adsorption of CH <sub>4</sub> on Various Metal Surfaces and on Metal Atoms Deposited on Oxide Surfaces"

9:40 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break
10:30 am - 11:10 am	<b>Yuki Nagata</b> (Max Planck Institute for Polymer Research, Germany) "Molecular Modelling of Ice-Air Interface"
11:10 am - 11:30 am	Discussion
11:30 am - 12:10 pm	<b>Alec Wodtke</b> (Max Planck Institute for Biophysical Chemistry, Germany) "Imaging the Kinetics of Surface Reactions"
12:10 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<b>Poster Session</b>
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	<b>Time-Resolved Dynamics at Surfaces</b> Discussion Leader: <b>Helmut Zacharias</b> (Universität Münster, Germany)
7:30 pm - 8:10 pm	<b>Hirohito Ogasawara</b> (SLAC National Accelerator Laboratory, Stanford University, USA) "Surface Chemical Reaction Probed by X-Ray Laser and Directed by Strong THz Radiation"
8:10 pm - 8:30 pm	Discussion
8:30 pm - 9:10 pm	<b>Kazuya Watanabe</b> (Kyoto University, Japan) "Ultrafast Vibrational Dynamics of Surface Adsorbates Studied by Time-Resolved Optical Spectroscopy"
9:10 pm - 9:30 pm	Discussion
<b>Tuesday</b>	
7:30 am - 8:30 am	Breakfast

8:30 am - 9:00 am	Group Photo
9:00 am - 12:30 pm	<b>Surface Dynamics of Energy Conversion Processes</b> Discussion Leader: <b>Hannes Jónsson</b> (University of Iceland, Iceland)
9:00 am - 9:40 am	<b>Bin Jiang</b> (University of Science and Technology of China, China) "Dissociative Dynamics of CO <sub>2</sub> on Metal Surfaces"
9:40 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break
10:30 am - 11:10 am	<b>Thomas Allison</b> (Stony Brook University, USA) "Ultrafast Dynamics of Charge-Transfer at Molecule-Surface Interfaces"
11:10 am - 11:30 am	Discussion
11:30 am - 12:10 pm	<b>Kramer Campen</b> (Fritz Haber Institute of the Max Planck Society, Germany) "A Femtosecond Resolved View of Electron Transfer Across Metal/Water Interfaces"
12:10 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<b>Poster Session</b>
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	<b>Young Investigator Presentations</b> Discussion Leader: <b>Arthur Utz</b> (Tufts University, USA)
7:30 pm - 8:00 pm	<b>Sara Isbill</b> (University of Tennessee, USA) "Interaction of Atomic Oxygen with Ag(111) and Ag(110) Surfaces: Oxygen Adsorption and Kinetics at Surface Versus Subsurface"
8:00 pm - 8:10 pm	Discussion

8:10 pm - 8:40 pm	<b>Dominik Peller</b> (University of Regensburg, Germany) "Watching Ultrafast Surface Dynamics of a Single Molecule in Slow Motion"
8:40 pm - 8:50 pm	Discussion
8:50 pm - 9:20 pm	<b>Paul Spiering</b> (Leiden Institute of Chemistry, Leiden University, The Netherlands) "Scrutinizing Electronic Friction Models for Molecules: Vibrational De-Excitation During Scattering of H <sub>2</sub> on Cu(111)"
9:20 pm - 9:30 pm	Discussion
<b>Wednesday</b>	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	<b>Dynamics at Liquid and Polymer Interfaces</b> Discussion Leader: <b>Jaime Stearns</b> (Air Force Research Laboratory, USA)
9:00 am - 9:40 am	<b>Kenneth McKendrick</b> (Heriot-Watt University, United Kingdom) "Reactive-Atom Scattering as a Probe of Surface Preference in Multicomponent Ionic-Liquid Mixtures"
9:40 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break
10:30 am - 11:10 am	<b>Timothy Minton</b> (Montana State University, USA) "Signatures of the Gas-Liquid Interface in Scattering Dynamics"
11:10 am - 11:30 am	Discussion
11:30 am - 12:10 pm	<b>Mark Ediger</b> (University of Wisconsin-Madison, USA) "Mobile Surfaces Allow Control of Molecular Orientation, Thermal Stability, and Photochemical Stability in Vapor-Deposited Organic Glasses"
12:10 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch

1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<b>Poster Session</b>
6:00 pm - 7:00 pm	Dinner
7:00 pm - 7:30 pm	<b>Business Meeting</b> <i>Nominations for the Next Vice Chair; Fill in Conference Evaluation Forms; Discuss Future Site and Scheduling Preferences; Election of the Next Vice Chair</i>
7:30 pm - 9:30 pm	<b>Computational Dynamics and Surface Chemistry</b> Discussion Leader: <b>Sharani Roy</b> (University of Tennessee, Knoxville, USA)
7:30 pm - 8:10 pm	<b>Cristina Díaz</b> (Universidad Autonoma de Madrid, Spain) "Scattering Under Fast Grazing Incidence and Other Challenges for Theory"
8:10 pm - 8:30 pm	Discussion
8:30 pm - 9:10 pm	<b>Leanne Chen</b> (California Institute of Technology, USA) "First-Principles Modeling of the Electrochemical Interface: Applications to CO <sub>2</sub> Reduction and Beyond"
9:10 pm - 9:30 pm	Discussion
<b>Thursday</b>	
7:30 am - 8:30 am	Breakfast
9:00 am - 12:30 pm	<b>Electron Dynamics at Surfaces and Non-Adiabaticity</b> Discussion Leader: <b>Aart Kleijn</b> (Center of Interface Dynamics for Sustainability, China)
9:00 am - 9:40 am	<b>Jie Shan</b> (Cornell University, USA) "Carrier and Valley Dynamics in Atomically Thin Transition Metal Dichalcogenides"
9:40 am - 10:00 am	Discussion
10:00 am - 10:30 am	Coffee Break

10:30 am - 11:10 am	<b>Peter Saalfrank</b> (Universitaet Potsdam, Germany) "Adsorbate Dynamics with Coupling to Electrons and Phonons"
11:10 am - 11:30 am	Discussion
11:30 am - 12:10 pm	<b>Mitsunori Kurahashi</b> (National Institute for Materials Science, Japan) "Oxygen Adsorption Dynamics Probed by a Spin- and Alignment-Controlled O <sub>2</sub> Beam"
12:10 pm - 12:30 pm	Discussion
12:30 pm - 1:30 pm	Lunch
1:30 pm - 4:00 pm	Free Time
4:00 pm - 6:00 pm	<b>Poster Session</b>
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	<b>Single Molecule Dynamics</b> Discussion Leader: <b>Bret Jackson</b> (University of Massachusetts Amherst, USA)
7:30 pm - 8:10 pm	<b>Taeyoung Choi</b> (Ewha Womans University / Center for Quantum Nanoscience, Institute for Basic Science, South Korea) "Experimental Studies of Single Spins on Surfaces"
8:10 pm - 8:30 pm	Discussion
8:30 pm - 9:10 pm	<b>Karina Morgenstern</b> (Ruhr-Universität Bochum, Germany) "The Local Signature of Phonons and Solvated Electrons Investigated by Low-Temperature STM"
9:10 pm - 9:30 pm	Discussion
<b>Friday</b>	
7:30 am - 8:30 am	Breakfast
9:00 am	Departure

## Contributors

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 **Gordon  
Research  
Conferences**

 **Carl Storm  
International  
Diversity Fellowship**

 **Predominantly  
Undergraduate  
Institution Fund (PUI)**



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