



Argonne National Laboratory

Lemont, Illinois, USA

ACKNOWLEDGEMENT

Sponsors

The Cluster Surface Interaction Workshop committee wishes to thank the following organizations and companies for their generous contributions to the success of the of the 2016 workshop :



Exhibitors: Extrel CMS
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PROGRAM

Tuesday, May 31, 2016

- 4-6pm Registration (Guest House)
- 4-6pm Reception (Guest House)

Wednesday, June 1, 2016

7:00-7:45am Buses from the Guest House to the conference building ESB-241

Session I Session Chair: Richard Palmer

- 8:00am Conference opening & Safety Talk given by James Young
- 8:05am Paul Kearns
Deputy Laboratory Director for Operations & Chief Operations Officer
Argonne National Laboratory
Welcome
- 8:20am Ib Chorkendorff - Invited lecture IL01
Technical University of Denmark
Mass-selected Nanoparticle for Heterogeneous and Electro-Catalysis
- 8:45am Larry Curtiss - Invited lecture IL02
Argonne National Laboratory, USA
Subnanometer Metal Clusters as Electrocatalysts in Li-O₂ Batteries
- 9:10am Fatih Sen - Hot topic from submitted abstracts HT1
Argonne National Laboratory, USA
Optimizing IrO₂ Nanoclusters for Oxygen Evolution
- 9:25am Peter Lievens - Invited lecture IL03
Katholieke Universiteit Leuven, Belgium
Clusters on Few Monolayers NaCl on Au(111)
- 9:50am Gunther Andersson - Hot topic from submitted abstracts HT02
Flinders University, Australia
Size and Distribution of Au clusters on Titania Surfaces Adsorbed from Solutions

10:05-10:25am Coffee break

Session II Session Chair: Wolfgang Harbich

- 10:25am Alessandro Fortunelli - Invited lecture IL04
CNR-ICCOM Pisa, Italy
Quantum Simulations of Metal Ultrananocatalysts
- 10:50am Roy Johnston - Invited lecture IL05
University of Birmingham, UK
Interactions of Nanoalloys with Oxide Supports and Adsorbates
- 11:15am Jaakko Akkola Invited-Hot-topic IHT2
Tampere University of Technology, Finland
CO Oxidation on AuCu Clusters: Role of Vacancies in MgO(100) Support
- 11:30am Scott Anderson - Invited lecture IL06
University of Utah, USA
XANES Interpretation and Strategies for Stabilizing Subnanometer Supported Clusters
- 11:55am Sungsik Lee - Invited hot topic talk IHT3
Argonne National Laboratory, USA
In-situ Real Time Monitoring of Sintering Resistant Catalysts Achieved by Surface Modifications
- 12:10pm Elisa Jimenez - Hot topic from submitted abstracts HT03
University of California Los Angeles, USA
Can we Design Highly Stable Metallic Nanoclusters for their Use in Heterogeneous Catalysis?

12:30-1:30pm Lunch & Presentations by Sponsors

Wednesday, June 1, 2016

Session III Session Chair: Peter Lievens

- 1:30pm Armin Kleibert - Invited lecture IL07
Swiss Light Source, Paul Scherrer Institut, Switzerland
Cluster-surface Interactions on Large Nanoparticles under Soft-landing Conditions
- 1:55pm Veronique Dupuis - Invited lecture IL08
Université Lyon 1-CNRS, France
Finite Size Effect on Structure and Magnetism of Mass-selected FeCo Clusters Embedded in Carbon Matrix
- 2:20pm Fengqi Song - Invited hot topic talk IHT4
Nanjing University, China
Sizeable Kane-Mele like Spin Orbit Coupling in the Iridium Clusters Decorated Graphene
- 2:35pm Paolo Milani - Invited lecture IL09
Università di Milano, Milano, Italy
Resistive Switching in Cluster-Assembled Nanostructured Gold Films
- 3:00pm Fernando Buendia - Hot topic from submitted abstracts HT04
Universidad Nacional Autónoma de México, Coyoacán Ciudad de México, México
AuRh Clusters in Gas Phase and Deposited on (100) MgO
- 3:15pm Eric Baxter - Hot topic from submitted abstracts HT05
University of Utah, USA
Size-Selected Model Catalysts for the Study of Mechanisms Involved in Endothermic Fuel Cooling

Session IV – Posters Session Chair: Avik Halder

3:30-5:30pm *Poster session with coffee

5:30-6:30pm Buses from the conference building ESB-241 to the Guest House

Free evening. Information about local options and transportation will be provided on site.

Thursday, June 2, 2016

7:00-7:45am Buses from the Guest House to the conference building ESB-241

Session V Session Chair: Atsushi Nakajima

- 8:00am Julia Laskin - Invited lecture IL10
Pacific Northwest National Laboratory, USA
Soft-Landing of Mass-Selected Cluster Ions for Studies in Catalysis and Energy Storage
- 8:25am Hannu Häkkinen - Invited lecture IL11
University of Jyväskylä, Finland
Active Gold on Active Oxides
- 8:50am Bing Yang - Invited hot topic talk IHT4
Argonne National Laboratory, USA
Ultra-small Clusters in Catalysis: Atomic Precision in Size/Composition Control
- 9:05am Wolfgang Harbich - Invited lecture IL12
Ecole Polytechnique Fédérale de Lausanne, Switzerland
Morphology, Stability and Reactivity of Small Mass Selected Metal Clusters on Hexagonal(h)-BN/Rh(111)
- 9:30am Yoshihide Watanabe - Invited lecture IL13
Toyota Central R&D Labs, Japan
Cluster-surface Interaction Facilitates Reaction
- 9:55am Avik Halder - Hot topic from submitted abstracts HT06
Argonne National Laboratory, USA
Efficient Carbon Dioxide Conversion to Methanol and Methane over Supported Copper Clusters at Low Pressures

10:10-10:40am Coffee break

Session VI Session Chair: Paolo Milani

- 10:40am Gerd Ganteför - Invited lecture IL14
Universität Konstanz, Germany
New Materials Synthesized from Size-Selected Bare Metal Clusters
- 11:05am Shiv Khanna - Invited lecture IL15
Virginia Commonwealth University, Richmond, USA
Role of Support in Reducing Sintering, Improving catalytic activity, and Stabilizing Magnetic order in deposited Clusters
- 11:30am Yasushi Iwata - Invited hot topic talk IHT5
National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan
Three-dimensional Surfaces Specific to The Silicon Cluster Superlattice, Synthesized with Direct Deposition of Monodisperse Silicon Clusters
- 11:45am Atsushi Nakajima - Invited lecture IL16
Keio University, Yokohama 223-8522, Japan
Monodispersed Immobilization and Island Formation of M@Si₁₆ Superatom
- 12:10pm Stefanie Roese - Hot topic from submitted abstracts HT07
Technische Universität Dortmund, Germany
Temperature Dependent Stabilization of Ag Clusters in Room Temperature Ionic Liquids

12:30-1:30pm Lunch & Presentations by Exhibitors

Thursday, June 2, 2016

Session VII Session Chair: Alessandro Fortunelli

- 1:30pm **Nisha Mammen** - Invited hot topic talk IHT6
Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India.
Diffusion and Sintering of Pt Clusters Deposited on MgO(001) Surfaces
- 1:45pm **William Kaden** - Hot topic from submitted abstracts HT08
University of Central Florida, USA
Role of Hydroxyls in Pd Cluster Nucleation and Stabilization over SiO₂ Thin-film Model Supports
- 2:00pm **Richard Palmer** - Invited lecture IL17
University of Birmingham, UK
Fulfilling Feynman's Vision: Arranging the Atoms in Size-Selected Clusters and a Route to Manufacturing
- 2:25pm **Gianfranco Pacchioni** - Invited lecture IL18
Università di Milano-Bicocca, Milano, Italy
Interaction of Metal Atoms and Clusters with Insulating Surfaces: Charge Transfer, Diffusion, Incorporation
- 2:50pm **Steven Buratto** - Hot topic from submitted abstracts HT09
University of California Santa Barbara, USA
The Reactivity and Structure of Size Selected V_xO_y Clusters on TiO₂ (110)
- 3:05pm **Michael White** - Invited lecture IL19
Stony Brook University & Brookhaven National Laboratory, USA
Interfacial Charge Transfer and Reactivity of Supported Metal Oxide Nanoclusters

3:45-4:30pm Buses from the conference building ESB-241 to the Guest House

5:45pm (**sharp**) Bus leaves from the Guest House to the Conference Dinner

Session VIII

6:30pm Conference Dinner

Friday, June 3, 2016

7:00-7:45am Buses from the Guest House to the conference building ESB-241

Session IX Session Chair: Gerd Ganteför

- 8:00am **Riccardo Ferrando** - Invited lecture IL20
University of Genoa, Genoa, Italy
Stress-driven symmetry breaking in free and supported nanoalloys
- 8:25am **Gereon Niedner-Schatteburg** - Hot topic from submitted abstracts HT10
TU Kaiserslautern, Kaiserslautern, Germany
Are the Surfaces of Size Selected 3d Metal Clusters Nitrophilic or Nitrophobic?
- 8:40am **Ingo Barke** - Invited lecture IL21
Universität Rostock, Germany
Metal Clusters on Silicon: From Chemical Activation Energies to Plasmonic Electron Emission
- 9:05am **Mihai Vaida** - Hot topic from submitted abstracts HT11
University of California Berkeley, USA
Monitoring the Ultrafast Charge Migration, Trapping, and Recombination at Clusters Supported on Surfaces with Femtosecond Extreme-ultraviolet Laser Pulses
- 9:20am **Vladimir Popok** - Hot topic from submitted abstracts HT12
Aalborg University, Denmark
Immersion of Soft-landed Metal Clusters into Polymers: What the Driving Force is and How to Control it.
- 9:35am **Heinz Hövel** - Invited hot topic talk IHT7
Technische Universität Dortmund, Germany
Clusters in Different Surroundings: From 'Quasi Free' Clusters on Surfaces to Clusters Collected in Room Temperature Ionic Liquids
- 9:50am **Kit Bowen** - Invited lecture IL22
Johns Hopkins University, USA
Adsorption and Decomposition of Dimethyl Methylphosphonate (DMMP) on Size-Selected Metal/Metal Oxide Clusters

10:15-10:40am Coffee break

Session X Session Chair: Michael White

- 10:40am **Shobhana Narasimhan** - Invited lecture IL23
Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
Size-dependent Oxidation and Reduction of Cu clusters
- 11:05am **Peter Zapol** - Hot topic from submitted abstracts HT13
Argonne National Laboratory, USA
Size-Selective Reactivity of Ag₄ vs Ag₁₆ on TiO₂ Surface
- 11:20am **Hisato Yasumatsu** - Invited lecture IL24
Toyota Technological Institute, Genesis Research Institute, Inc., Ichikawa, Japan
Molecular Understanding in Reaction Kinetics of Low-Temperature and Anti-Poisoning CO Oxidation Catalyzed by Uni-Sized Pt Clusters Directly Bound to Si Substrate Surface
- 11:45am **Stefan Vajda** - Invited lecture IL25
Argonne National Laboratory
Size Selected Cobalt Clusters in Fischer-Tropsch Reaction
- 12:10pm **Waiz Karim** - Hot topic from submitted abstracts HT14
ETH Zurich, Switzerland
Hydrogen Spillover Visualized with X-PEEM and Nanofabricated Model system

12:30pm Concluding Remarks & Adjourn

12:30-1:30pm Lunch & discussions

1:30-2:30pm Buses from the conference building ESB-241 to the Guest House

*Posters will be on display during the entire duration of the meeting in a joint area with the booths of sponsors and exhibitors.