***Schedule Outline***

**Semiconductor Surface Chemistry**

**Organizer:** Andrew V. Teplyakov

**TSRC Hosts:** Mark Kozak, 970-708-4426

**Location:** Telluride Intermediate School located at 725 W Colorado Ave, Telluride, CO 81435

**Sunday July 29th:**

6-8:00 pm, Informal gathering at the [Phoenix Bean](https://www.google.com/maps/place/Phoenix+Bean/@37.9377127,-107.8144253,17z/data=%213m1%214b1%214m5%213m4%211s0x873ed862b4f1cbf3:0x481ad2031b1e4cb4%218m2%213d37.9377085%214d-107.8122366) (221 W Colorado Ave), for a “meet and greet”; cash bar, drinks and food available

**Monday July 30th:**

7:30-8 am, Breakfast at TSRC

8 am-12:20 pm, Morning session: Nanostructures, thin films, morphology. Chair: R. Opila

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| 8:00-8:30 AM |  | Walker | Understanding and Exploiting Surface Chemistry to Direct the In-Situ Synthesis and Placement of Nanostructures." |
| 8:30-9:00 AM |  | Clemens | Vapor Phase Nanoparticles for Energy Applications |
| 9:00-9:30 AM |  | Engstrom | Examination of thin film growth using supersonic molecular beams and in situ real time X-ray synchrotron radiation: organic small molecule semiconductors |
| 9:30-10:00 AM |  | Garfunkel | Nanolithography |
| 10:00-10:20 AM | Break |  |  |
| 10:20-10:50 AM |  | Filler | Infrared Plasmonics: The Impact of Surfaces on Synthesis and Optical Properties; |
| 10:50-11:20 AM |  | Teplyakov | Preserving oxide morphology in gas-phase functionalization |
| 11:20-12:20 AM |  | Chabal | Chemistry in confined environments (MOFs) |

Afternoon unscheduled

6:30-9:40 pm, Evening session: Semiconductor surface: Reactions and catalysis. Chair: S. Bent

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| 6:30-7:00 PM |  | Hamers | Photocatalytic reactions at diamond surfaces |
| 7:00-8:00 PM |  | Duerr | Organic Molecules on Silicon Surfaces: Reaction Dynamics, Kinetics, and Control |
| 8:00-8:10 PM | Break |  |  |
| 8:10-8:40 PM |  | Parkinson | Single atom catalysis on metal oxide surfaces - (CO oxidation mostly, Pt and Rh atoms adsorbed on Fe3O4 doing chemistry); |
| 8:40-9:40 PM |  | Hines | New Eyes for Nanocatalysis: Atomic Scale Investigations of TiO2 Chemistry |

**Tuesday July 31th:**

7:30-8 am, Breakfast at TSRC

8 am-12:10 pm, Morning session: Deposition and nucleation chemistry. Chair: A. Kummel

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| 8:00-9:00 AM |  | Bent | Surface Functionalization through Atomic and Molecular Layer Deposition |
| 9:00-10:00 AM |  | Ekerdt | Chemistry at the Semiconductor Interface During ALD of Crystalline Oxides |
| 10:00-10:10 AM |  | Break |  |
| 10:10-10:40 AM |  | Opila | Mechanistic Determination of Atomic Layer Etching |
| 10:40-11:10 AM |  | Teplyakov | Rational approach to deposition and etching |
| 11:10 AM-12:10 PM |  | Zaera | The Surface Chemistry of Atomic Layer Depositions (ALD) |
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2:00-4:00 pm, Afternoon session: Biological and nano-compatibility. Chair: A. Teplyakov

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| 2:00-2:30 PM |  | Kummel | Functionalization of silica particles for immunotherapy |
| 2:30-3:00 PM |  | Hamers | Nanodiamond as an environmental and biological probe |
| 3:00-4:00 PM |  | Raghavachari | Well-defined Nanographene-Based Systems for Catalytic Applications |

6:30 – 7:15pm, Evening Session

TSRC Town Talks, Conference Center in Mountain Village (cash bar starts at 6:00 pm)

**Wednesday August 1st**

7:30-8 am, Breakfast at TSRC

8 am-11:50 am noon, Morning session: Passivation and oxidation Chair: A. Teplyakov

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| 8:00-8:30 AM |  | Rochet | Formation, electronic structure and reactivity of silicon dangling bonds on functionalized Si(001) |
| 8:30-9:00 AM |  | Opila | How Chemistry Affects the Passivation of Surfaces |
| 9:00-9:30 AM |  | Kummel | Passivation of semiconductor surfaces for deposition of gate dielectrics |
| 9:30-9:50 AM | Break |  |  |
| 9:50-10:20 AM |  | Rochet | Time-resolved XPS spectroscopy of oxidation/deoxidation processes of Si(111) |
| 10:20-10:50 AM |  | Parkinson | Water adsorption/oxidation on iron oxides |
| 10:50-11:50 AM |  | Schofield | Dopands, defects, molecular adsorption on silicon by STM and XPS |

Afternoon unscheduled

6:00 – 9:00 pm Wednesday evening picnic from 6:00 pm to 8:00 pm at the Telluride Intermediate School, under the tent. (Family and guest welcome free of charge)

**Thursday August 2nd**

7:30-8 am, Breakfast at TSRC

8 am-11:00 pm, Morning session: Control over formation and properties of interfaces. Chair: R. Opila

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| 8:00-9:00 AM |  | Tonner | (In)organic surface functionalization in silico - from concepts to interfaces |
| 9:00-9:30 AM |  | Clemens | Laser Liftoff of III-V Epitaxial Thin Films |
| 9:30-10:00 AM |  | Filler | Surface Chemical Controlled Synthesis and Patterning of Semiconductor Nanowires" |
| 9:30-10:00 AM |  | Walker | Controlled Growth of Transition Metal Dichalcogenide Polymorphs |
| 10:00-10:30 AM |  | Garfunkel | Photoelectrochemistry |
| 10:30-11:00 AM |  | Engstrom | Examination of thin film growth using supersonic molecular beams and in situ real time X-ray synchrotron radiation: transition metal dichalcogenides |

2:00-4:00 pm, Afternoon Session, Hot Topics

TBA