

Telluride Science Research Center Workshop

Molecules and Mechanisms for Quantum Information Processing

September 23-27, 2019

[Telluride Firehouse](#) Meeting Room at 131 West Columbia Ave.

Organizers: Martin Kirk, David Shultz, Michael Wasielewski

Sunday, September 22nd

- 5:00 pm: Welcome Reception at the Phoenix Bean, 221 W Colorado Ave, Telluride, CO 81320

Monday, September 23rd

- 8:15 – 8:45am: Continental Breakfast
- Morning Session (Chair: Dave Shultz)
 - ▶ 8:45 – 9:00am: Opening Remarks (Marty Kirk, Dave Shultz, Mike Wasielewski)
 - ▶ 9:00 – 9:45am: **Mike Wasielewski** (Northwestern University); *Photodriven Quantum Teleportation of an Electron Spin State in a Covalent Donor-Acceptor-Radical System*
 - ▶ 9:45 – 10:30am: **Joel Yuen Zhou** (UC San Diego); *TBA*
 - ▶ 10:30 – 11:00am: Coffee Break and Roundtable prep
 - ▶ 11:00 – 12:20am: **Roundtable Discussion**
 - ▶ 12:20 – 2:30pm: Lunch
- Afternoon Session (Chair: Marty Kirk)
 - ▶ 2:30 – 3:15pm: **Michael Therien** (Duke University); *Chiral, Low-Resistance Organic Frameworks that Uniquely Propagate Spin Polarized Currents*
 - ▶ 3:15am – 4:00pm: **Natia Frank** (University of Victoria); *Opto-Spintronics: Photoisomerization-Induced Spin State Switching (PISCES) in Organic-Inorganic Thin Films at Ambient Temperature*
 - ▶ 4:00 – 4:30pm: Coffee Break and Roundtable prep
 - ▶ 4:30 – 5:50pm: **Roundtable Discussion**
 - ▶ 6:00pm: Dinner on your own

Tuesday, September 24th

- 8:15 – 9:00am: Continental Breakfast
- Morning Session (Chair: Mike Wasielewski)
 - ▶ 9:00 – 9:45am: **Martin Kirk** (University of New Mexico); *Optical Generation and Manipulation of Spin Qubits*
 - ▶ 9:45 – 10:30am: **Ezekiel Johnston-Halperin** (Ohio State University); *Coherent Magnonics in Organic-Based Materials*
 - ▶ 10:30 – 11:00am: Coffee Break and Roundtable prep

▶ 11:00 – 12:20pm: **Roundtable Discussion**

▶ 12:20 – 2:30pm: Lunch

• Afternoon Session (Chair: Stefan Stoll)

▶ 2:30 – 3:15pm: **Louise Berben** (UC Davis); *Organic mixed-valency across a five charge states of group 13 complexes*

▶ 3:15am – 4:00pm: **Malcolm Forbes** (Bowling Green State University); *New Multi-Spin MOF Systems for Spin Entanglement*

▶ 4:00 – 4:30pm: Coffee Break and Roundtable prep

▶ 4:30 – 5:50pm: **Roundtable Discussion**

▶ 6:00pm: Dinner on your own

Wednesday, September 25th

• Morning Session (Chair: Jim McCusker)

Discuss, outline and draft a prospectives manuscript to be submitted to *Chem*

• Afternoon Free

▶ 6:30pm: Workshop Dinner: The Chop House at the New Sheridan Hotel, Telluride.

Thursday, September 26th

• 8:15 – 9:00am: Continental Breakfast

• Morning Session (Chair: Malcolm Forbes)

▶ 9:00 – 9:45am: **Jim McCusker** (Michigan State University); *Using Spin to Control Excited-state Reactivity*

▶ 9:45 – 10:30am: **Joe Zadrozny** (Colorado State University); *Control of Spin Relaxation via Manipulation of the Spin Bath and its Edge*

▶ 10:30 – 11:00am: Coffee Break and Roundtable prep

▶ 11:00 – 12:20pm: **Roundtable Discussion**

▶ 12:20 – 2:30pm: Lunch

• Afternoon Session (Chair: Natia Frank)

▶ 2:30 – 3:15pm: **Stefan Stoll** (University of Washington); *Predictive models for decoherence in molecular systems*

▶ 3:15am – 4:00pm: **Silas Blackstock** (University of Alabama); *Using Electron Loss to Switch Spin, Charge, Structure, and Reactivity of N-based Organic Molecules*

▶ 4:00 – 4:30pm: Coffee Break and Roundtable prep

▶ 4:30 – 5:50pm: **Roundtable Discussion**

▶ 6:00pm: Dinner on your own

Friday, September 27th

Departures throughout the day

Note to session chairs: Prepare a single PowerPoint slide or written summary of the two talks in your session and list a few possible discussion points to kickstart the roundtable discussion process. At some point, the roundtable discussion should cover one or more of the following:

1. The work presented in the session, in the context of "current status of the field;"
2. Possible future directions that are incremental and those that are "pie in the sky;"
3. Potential connections that would promote collaborations;
4. Mechanisms with which to engage industrial partners (difficult but not impossible).