Optical Science & Engineering Conference
Ballroom A – Strand Union Building
Montana State University
Bozeman, Montana

Presented by the MSU Optical Technology Center (OpTeC), with support from the MSU Vice-President for Research and Economic Development, the City of Bozeman, and the Montana Photonics Industry Alliance.

Conference Agenda
Thursday, 11 September 2014

Conference Organizers:
Dr. Joseph Shaw – OpTeC Director
Dr. Larry Johnson – Montana Photonics Industry Alliance President
Diane Harn – Conference Assistant

8:00 am  CHECK-IN and MORNING REFRESHMENTS

8:25 am  Joseph Shaw – OpTeC Director, MSU
Welcome and opening remarks

Session 1  
Session chair: David Dickensheets

8:30 am  Tom Baur – invited speaker
President of Meadowlark Optics, Frederick, Colorado
Optical Devices for Polarization Control

9:05 am  Tianbo Liu & David Dickensheets
MSU Electrical and Computer Engineering Department
MEMS deformable mirror with integrated black silicon aperture

9:20 am  John Kirtley, Daniel Steinhurst, Jeffrey Owrutsky, Michael Pomfret, Robert A. Walker
MSU Chemistry and Biochemistry Department
A portfolio of direct, in operando optical techniques to study anody electrochemical mechanisms in an SOFC
9:40 am  Alexander Mikhaylov, a Lauren Bennett, b Thom Hughes, b Mikhail Drobizhev, a Caleb Stoltzfu, a Geoffrey Wicks, a Jake Lindquist, a Aleksander Rebane a
a MSU Physics Department
b MSU Cell Biology and Neuroscience Department
*The role of the chromophore electronic structure and electrostatic interactions in photoconversion of red fluorescent proteins*

10:00 am  BREAK & REFRESHMENTS

**Session 2**  
Session chair: Rob Walker

10:25 am  Geoffrey Wicks, Aleksander Rebane, and Mikhail Drobizhev  
MSU Physics Department  
*Investigating intramolecular charge transfer using two-photon absorption: The quadratic stark effect applied to inhomogeneous broadening*

10:45 am  Edward Dratz, Jacob Robison, Elizabeth Corbin, Andrew Kavran, Guy Cook, Mensur Dlakic and Phillip Sullivan  
MSU Chemistry and Biochemistry Department  
*Development of multicolor fluorescent reporters for real time measurements of the metabolic states of live cells: application to optimization of the production of human adult pluripotent stem cells.*

11:05 am  Mike Roddewig, a Nathan Pust, a and Ric Hauer b, Joseph Shaw a  
a MSU Electrical and Computer Engineering Department  
b Montana Institute on Ecosystems and University of Montana, Flathead Lake Biological Research Station  
*Airborne trout detection using dual-polarization lidar*

11:20 am  End of morning sessions

11:30 am – 1:30 pm  
**National Academy of Inventors luncheon** – SUB Ballrooms B & C  
(requires luncheon pre-registration)

**Session 3**  
Chair: Randy Babbitt

1:40 pm  Caleb Stoltzfus, a Lauren Barnett, a Aleksander Rebane, a Thomas Hughes, b Mikhail Drobizhev, a Geoffrey Wicks, a Alexandr Mikhailov a  
a MSU Physics Department  
b MSU Cell Biology & Neuroscience Department  
*Wide field two-photon excited fluorescence imaging*

2:00 pm  Erik Grumstrup, James K. Parker, Jim F. Cahoon, John M. Papnikolas  
MSU Material Science and Chemistry & Biochemistry  
*Ultrafast imaging and spectroscopy of strained nanostructures*
OpTeC Annual Meeting Agenda  3  11 Sept. 2014

Session 4  Commercialization of Optics & Photonics Technology  Co-chairs: Joe Shaw & Larry Johnson

2:20 pm  Joe Shaw – Welcome and recognition of invited guests

2:30 pm  Tom Baur – President of Meadowlark Optics, Frederick, Colorado
Growing an Optics Company

3:00 pm  **BREAK & REFRESHMENTS**

3:30 pm  Rob Irizarry, Director Blackstone LaunchPad
Blackstone LaunchPad at Montana State University

4:00 pm  Larry Johnson, President
Montana Photonics Industry Alliance
Montana’s Emerging Photonics Industry and the MPIA

4:20 pm  Steve Birrell, President
Quantum Composers, Inc
The Quantum Composers Story

4:40 pm  Luke Mauritsen, President
Montana Instruments Corporation
The Montana Instruments Story

5:00 pm  Hors d’oeuvres & poster setup

6:00 – 8:00 pm  **POSTER SESSION & DINNER**

Session 5 – Poster Session

Company exhibits and posters

AdVR, Inc.  Altos Photonics
Bridger Photonics  FLIR/Scientific Materials Corp.
Lattice Materials Corp.  Montana Instruments
MSU Innovation Campus  Newport/ILX Lightwave
NWB Sensors, Inc.  406 Aerospace
Quantel USA  Resonon, Inc.
S2 Corp.

Other companies with representatives in attendance

Phenix FO  Quantum Composers, Inc.
Sensory Labs  Yellowstone Scientific
Research Posters

1. Zeb Barber  
   MSU Spectrum Lab  
   *Low light Synthetic Aperture Ladar*

2. Russell Barbour  
   MSU Spectrum Lab  
   *Testing KTP waveguides for high power second harmonic generation*

3. Pushkar Padit  
   MSU Spectrum Lab  
   *Compressive laser ranging and imaging*

4. Tia Sharpe  
   MSU Spectrum Lab  
   *Spatial-spectral holographic rainbow spectrometer for ultra-wideband cueing receiver*

5. Carol Baumbauer, Ben Moon, Sean Nicolaysen, David Dickensheets, Wataru Nakagawa  
   MSU Electrical & Computer Engineering  
   *Design optimization of multifunctional silicon-based nanostructured optical devices*

6. Nate Field, Wataru Nakagawa  
   MSU Electrical & Computer Engineering  
   *Single-beam polarization interferometry*

7. Bridget Kilcrease, David Dickensheets, Tianbo Liu  
   MSU Electrical & Computer Engineering  
   *Protected Silver Coating for Focus Control Mirrors in a Confocal Laser Scanning Microscope*

8. Eric Gobrogge  
   MSU Chemistry & Biochemistry (Walker Group)  
   *Nonlinear optical studies of absorption and organization at solid/liquid interfaces*

9. Lauren Woods, Jenna George, Alex Sherman, Robert Walker  
   MSU Chemistry & Biochemistry (Walker Group)  
   *Solvation induced effects on multilayer formation of coumarin 152 at the silica/methanol interface*

10. Melissa McIntyre, John D. Kirtley, Anand Singh, Josephine Hill, Robert A. Walker  
    MSU Chemistry & Biochemistry (Walker Group)  
    *Comparing in situ carbon tolerances of Sn-doped and Ba-doped Ni-YSZ cermet anodes in solid oxide fuel cells*

11. Christine Gobrogge  
    MSU Chemistry & Biochemistry (Walker Group)  
    *Reversible partitioning in model membrane system*

*OpTeC Annual Meeting Agenda*  
11 Sept. 2014
12. Kyle Reeping  
   MSU Chemistry & Biochemistry (Walker Group)  
   *Correlating real time, in situ spectroscopic observations with electrochemical performance provides insight into the ability of solid oxide fuel cells (SOFCs)*

13. Daniel Neuburger  
   MSU Chemistry & Biochemistry (Walker Group)  
   *In situ spectroscopic studies of reversible, temperature dependent carbon restructuring*

14. Martin Tauc, Joseph Shaw, Kevin Repasky  
   MSU Electrical & Computer Engineering  
   *Wing-beat modulation lidar for insect studies*

15. David Skowron  
   MSU Chemistry and Biochemistry (Kohler Group)  
   *Time dependent fluorescence of model DNA oligomers*

16. Ashley Beckstead  
   MSU Chemistry and Biochemistry (Kohler Group)  
   *Excited-state dynamics of adenine DNA systems in non-aqueous deep eutectic solvents revealed by femtosecond transient absorption spectroscopy*

17. Jacob Remington  
   MSU Chemistry and Biochemistry (Kohler Group)  
   *Modeling diffusion enhanced electron transfer in ssDNA labeled with a fluorescent base analog*

18. Drew Moen  
   MSU Electrical and Computer Engineering (Repasky group)  
   *Progress towards an autonomous field deployable diode laser based differential absorption lidar (DIAL) for profiling water vapor in the lower troposphere*

19. Ben Soukup  
   MSU Electrical and Computer Engineering (Repasky Group)  
   *Development and testing of a scanning differential absorption lidar for carbon sequestration site monitoring*