

## News Update:

### May 2015

### Volume 18, Issue 3

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#### Industry Highlights

#### Upcoming Montana Biofilm Meeting, July 2015

The summer Montana Biofilm Meeting for our Industrial Associate members and invited guests will be held in Bozeman, Montana July 14–16, 2015 (Tuesday–Thursday). Featured topics of research include:

- Oilfield Biofilms
- Regulatory Agency Update
- Medical Biofilms
- Biofilm Mineral Interactions
- Biofilm Fundamentals
- New Tools in Image Analysis, Methods, Microfluidics, and Materials

Review [draft meeting agenda](#) (pdf)

#### **Pre-Meeting Workshop:**

We are offering one pre-meeting workshop on Monday, July 13: “Biofilm Methods for your Lab.” This is a hands-on workshop conducted by CBE’s standardized biofilm methods lab. This workshop will cover each component of biofilm growth and treatment methods. Participants will review the most critical parameters for each component, followed by small group activities where participants can ask method-specific questions. The biofilm growth methods presented include the CDC biofilm reactor (ASTM Method E2562), drip flow biofilm reactor (ASTM 2647) and MBEC device (ASTM Method 2799). The treatment methods presented include the Single Tube Method (ASTM Method 2871) and the MBEC method (ASTM Method 2799). Workshop location: CBE labs.

The workshop is free for CBE members or at cost of \$500 for non-members. Attendance is limited to 12 people. If you are interested in attending, please contact Paul Sturman at [paul\\_s@biofilm.montana.edu](mailto:paul_s@biofilm.montana.edu) or (406) 944-2102 before registering for the meeting.

#### **CBE Lab Open House and Poster Session:**

In addition to the general meeting, we will be hosting a lab open house and poster session on the afternoon of Tuesday, July 14. If you would like to present a poster at this session, please drop me a note as soon as you can; include the title and a short abstract, as we have limited spots for

attendee posters.

If you would like an invitation to this meeting please contact Paul Sturman at [paul\\_s@biofilm.montana.edu](mailto:paul_s@biofilm.montana.edu) (406) 994-2102.

### Young Investigator Award Recipients

We are pleased to announce two awardees who will be presenting their biofilm research as Young Investigators at the July Montana Biofilm Meeting. **Robert Huigens**, assistant professor in medicinal chemistry at University of Florida, will present “Phenazine antibiotic inspired discovery of biofilm-eradicating small molecules.” **Juan Pavissich**, postdoctoral researcher in biotechnology at Delft University of Technology in Delft, The Netherlands, will present “Coupling multi-scale in situ determination of biofilm mechanical properties to mathematical modeling of biofilm fluid-structure interaction.”

The CBE launched the Young Investigator program in 2009 to encourage the participation of outstanding non-Montana State University biofilm investigators in our semi-annual Montana Biofilm Meetings. Targeting postdoctoral researchers and newly hired faculty, up to two investigators are invited to present research at each MBM and provided a \$750 travel reimbursement and registration at the meeting.

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### Research Highlights

#### Jim Wilking wins NSF CAREER award

CBE faculty member **Jim Wilking**, assistant professor in MSU's Department of Chemical and Biological Engineering, was recently awarded a prestigious NSF CAREER award, the National Science Foundation's top award for young scientists. The Young Investigator CAREER Award provides \$503,396 over five years, which he will use to study the physical and material properties of biofilms. He will also use the award to develop teaching modules for after-school programs across Montana.

Read more about Wilking and his research at: <http://www.montana.edu/news/15518/msu-researcher-receives-nsf-s-top-award-for-young-scientists>

#### CBE Student Research Awards

Three CBE graduate students were selected to receive a travel award to deliver an oral presentation at the upcoming national meeting of the American Society of Microbiology (ASM) in New Orleans, Louisiana May 30–June 2, 2015. ASM's national meeting is the world's largest meeting of microbiologists.

**Laura Camilleri**, PhD student in microbiology & immunology, will present “Altered gene expression in a methanogenic, symbiotic biofilm.” Supervisor: **Matthew Fields**, MSU-CBE professor in microbiology & immunology

**Greg Krantz**, PhD student in microbiology & immunology, will present “Electron donor limitation promotes metal corrosion by *Desulfovibrio alaskensis* biofilms.” Supervisor: **Matthew Fields**

**Tatsuya Akiyama**, PhD student in microbiology & immunology, will present “Regulation of hibernation promoting factor (hpf) and ribosome modulation factor (rmf) of *Pseudomonas aeruginosa* includes transcriptional and post-transcriptional mechanisms.” Supervisor: **Mike Franklin**, MSU-CBE professor in microbiology & immunology

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**Heidi Smith**, MSU-CBE PhD student in land resources and environmental sciences, was recently awarded the Montana Academy of Sciences (MAS) annual Laurie Henneman Award for Best Graduate Student Research Presentation. Smith was recognized for her poster “Riverine dissolved organic matter decomposition and dynamics,” which she presented at the MAS annual meeting in Butte, Montana April 10–11, 2015. Smith’s supervisor is MSU-CBE faculty member **Christine Foreman**, associate professor, chemical & biological engineering.

Montana Academy of Sciences promotes scientific research and public understanding of science through student research grants, an annual scientific meeting, and an annual public symposium that highlights the role of science in our society.

### Uncovering the monumental effects of biofilm

**Federica Villa**, a Center for Biofilm Engineering visiting researcher from Italy, is delving into the effects of biofilm on some iconic American monuments. A postgraduate researcher from the University of Milan, Villa came to CBE in 2013 for a two-year stay to conduct studies on biofilm samples she has collected from the Jefferson and Lincoln memorials in Washington, D.C., and the Federal Hall National Memorial in New York City.

Villa's research is featured in the spring 2015 issue of MSU's *Mountains and Minds* magazine: <http://www.montana.edu/mountainsandminds/article.php?article=15537>

### Latest CBE Publications

Bray JM, Rassi EM, **Seymour JD**, **Codd SL**

“Magnetic resonance measurement of fluid dynamics and transport in tube flow of a near-critical fluid“

*Exp. Fluids*, 2014; 55(7):1777.

Fridjonsson EO, **Codd SL**, **Seymour JD**

“Application of PFG–NMR to study the impact of colloidal deposition on hydrodynamic

dispersion in a porous medium”  
*Transp Porous Med.*, 2014; 103(1):117–130.

**Lauchnor EG**, Semprini L, Wood BD  
“Kinetic parameter estimation in *N. europaea* biofilms using a 2-D reactive transport model”  
*Biotechnol Bioeng.*, 2015; 112(6): 1122–31.

**Lohman EJ, Gardner RD, Halverson L, Peyton BM, Gerlach R**  
“Carbon partitioning in lipids synthesized by *Chlamydomonas reinhardtii* when cultured under three unique inorganic carbon regimes”  
*Algal Research*, 2014; 5:171–180.

**Vogt SJ**, Shaw CA, Maneval JE, Brox TI, Skidmore ML, **Codd SL, Seymour JD**  
“Magnetic resonance measurements of flow-path enhancement during supercritical CO<sub>2</sub> injection in sandstone and carbonate rock cores”  
*J Petroleum Science and Eng.*, 2014; 122: 507–514

View [Publications database](#)

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## Education

### MSU Annual Day of Student Recognition

Two CBE undergraduate students were among the forty-one students honored at MSU’s 92<sup>nd</sup> Annual Day of Student Recognition. The event recognizes student achievement in leadership, involvement in various campus-wide activities, and community service. Awards were presented at a reception held on Tuesday, April 16<sup>th</sup> on the MSU campus.

**Spencer Dahl**, chemical and biological engineering, received the Max Worthington Service Award. The award is presented to a senior man whose service to MSU has exemplified high scholarship, values, and concern for others. Dahl is from Carter, Montana. His CBE advisor is Dr. **Rich Macur**.

**Kathryn Pintar**, chemical and biological engineering, received the Erma Lessel Collins Junior Award. The award recognizes a new, junior Mortar Board member who best exemplifies campus and community service. Pintar is from Spokane, Washington. Her CBE advisor is Dr. **Ross Carlson**.

View the full list of honorees at *MSU News*: <http://www.montana.edu/news/15519/students-honored-at-msu-s-day-of-student-recognition>

## CBE Outstanding Faculty Award

**Jim Wilking** was awarded CBE's 2015 Outstanding Faculty Award. Wilking was recognized for his quick and enthusiastic engagement with the intellectual and team life of CBE, involvement of students in research, and in recognition of his NSF CAREER Award.

## College of Engineering Awards

MSU's College of Engineering (COE) honored faculty and students at its annual awards luncheon on April 28, 2015. Two CBE affiliated faculty members received awards at the ceremony.

**Al Cunningham**, professor of civil engineering, received the COE 2015 award for Excellence in Research. **Ross Carlson**, associate professor of chemical and biological engineering, received the COE 2015 award for Excellence in Teaching.

**Cunningham** was honored as an internationally recognized researcher on the beneficial use of biofilms in porous media, working across disciplines, building strong collaborations with faculty, students, and industry partners. He has advised 14 PhD students and 16 master's students.

**Carlson** was recognized for his stellar teaching evaluations by his students and peers whether measured qualitatively or by the numbers. Despite being busy with research, and being asked to teach some of the most difficult and abstract material in a chemical engineering curriculum, Carlson engages and inspires students.

## Thesis Alert

“Non-destructive assessment of household reverse osmosis water treatment membrane biofouling,” successful thesis defense by **Stephen Markwardt**, master's candidate, civil engineering, Montana State University, May 7, 2015

[Read abstract](#)

View [Thesis database](#)

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## Outreach

### Visiting Researchers

CBE is pleased to welcome the following visiting graduate student for summer 2015:

**Charles Fosseprez**, master's student

Hometown: Etterbeek, Belgium

Area of study/Home university: Engineering and Biotechnology, AgroParisTech, Paris, France

Research at the CBE: biofilms and microbial consortia

CBE Supervisor: **Ross Carlson**, associate professor, chemical & biological engineering

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## People in Action

**Juliana D'Andrilli**, assistant research professor, chemical and biological engineering, and **Heidi Smith**, PhD student, land resources and environmental sciences, presented their research at the American Chemical Society (ACS) annual meeting in Denver, CO March 22–27, 2015:

D'Andrilli presented “Antarctic ice-locked reservoirs of organic matter: Probing the bulk and molecular level chemical nature of organic matter by fluorescence spectroscopy and mass spectrometry”

Smith presented “Transformations in autochthonous DOM: An Antarctic supraglacial case study.”

**Phil Stewart**, CBE director, presented the following research in March 2015:

“Mechanics of microorganisms in biofilms,” presented at The Physics of Microorganisms meeting organized by the Institute of Physics, London, England, March 23, 2015.

“Biofilm control: Engineering science and modeling,” presented at Newcastle University, Newcastle Upon Tyne, England, March 20, 2105.