News Update:
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Industry Highlights

Upcoming Montana Biofilm Meeting, July 2016

The summer Montana Biofilm Meeting for our Industrial Associate members and invited guests will be held in Bozeman, Montana July 19–21, 2016 (Tuesday—Thursday). Featured topics of research include:

- Biofilm Methods
- Fungal Biofilms
- Multi-Species Biofilms
- Industrial Biofilms
- Wound Biofilms
- Device-Related Biofilms

Meeting draft agenda (pdf)

Early registration is open now until June 15, 2016. Meeting registration fees are as follows:

Registration Type	Early registration until 6/15/16	Late registration after 6/15/16
Member	$400	$450
Non member	$800	$900
Academic/Gov't	$400	$450

If you would like an invitation to this meeting please contact Paul Sturman at paul_s@montana.edu or (406) 994-2102.

Pre-Meeting Workshop:

We are offering one pre-meeting workshop on Monday, July 18 "The Scale of Biofilm Studies." From field studies to laboratory experiments, researchers investigate biofilms from macro- to nanoscale. During this workshop you will travel these scales, big to small, through presentations and laboratory demonstrations. You will see examples of field-scale algal biofilms, discover how high-lipid content algal biofuels are identified by microfluidic cell sorting and learn about hard

surface disinfectant methods at the benchtop. The day will end at the smallest scale, visiting labs at MSU's new NSF-funded Montana Nanotechnology Facility (MONT). MONT will provide academia, government and industry with state-of-the-art tools and expertise within all disciplines of nanoscale science, engineering and technology.

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@montana.edu or (406) 944-2102 before registering for the meeting. Workshop location: EPS building labs.

Workshop draft agenda (pdf)

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 19. If you would like to present a poster at this session, please contact Paul Sturman at your earliest opportunity as there are limited spots for attendee posters. Please include a title and a short abstract.

Young Investigator Award Recipients

We are pleased to announce four awardees who will be presenting their biofilm research as Young Investigators at the upcoming Montana Biofilm Meeting:

Devendra Dusane, Postdoctoral Researcher, Microbial Infection & Immunity, The Ohio State University, will present "Strategies to treat intracellular and biofilm forming *Staphylococcus aureus* in orthopedic infections."

Curtis Larimer, Postdoctoral Fellow, Pacific Northwest National Laboratory, will present "Quantifying biofilm development and structure with image analysis and high resolution 3D imaging."

Sarah Morgan, Senior Postdoctoral Fellow, Microbiology, University of Washington, will present "Bacterial fitness determinants in chronic wound infections: Correlation with in vitro biofilm fitness."

Rosa Oliveira, Postdoctoral Researcher, Araraquara School of Dentistry, UNESP–Univ. Estadual Paulista, will present "Effects of chlorhexidine treatments on single and mixed species biofilms of *Streptococcus acidophilus* as well as *S. mutans* and *Actinomyces naeslundii*."

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

Research Highlights

Latest Publications

Inskeep WP, **Jay ZJ**, **Macur RE**, Clingenpeel S, Tenney A, Lovalvo D, Beam JP, Kozubal MA, Shanks WC, Morgan LA, Kan J, Gorby Y, Yooseph S, Nealson K
"Geomicrobiology of sublacustrine thermal vents in Yellowstone Lake: Geochemical controls on microbial community structure and function"
Front Microbiol., 2015 Oct 26; 6:1044.
Read abstract

Kirkland CM, **Hiebert R**, **Phillips A**, Grunewald E, Walsh DO, **Seymour JD**, **Codd SL**
"Biofilm detection in a model well-bore environment using low-field magnetic resonance"
Groundwater Monitoring & Remediation, 2015 Fall; 35(4) 36–44.
Read abstract

Singh D, **Carlson R**, Fell D, Poolman M
"Modelling metabolism of the diatom *Phaeodactylum tricornutum*"
Biochem Soc Trans. 2015 Dec 1; 43(6):1182-6.
Read abstract

Tao Y, Rotem A, Zhang H, Cockrell SK, Koehler SA, **Chang CB**, Ung LW, Cantalupo PG, Ren Y, Lin JS, Feldman AB, Wobus CE, Pipas JM, Weitz DA
"Artifact-free quantification and sequencing of rare recombinant viruses by using drop-based microfluidics"
Chembiochem., 2015 Oct 12; 16(15):2167–71.
Read abstract

Villa F, **Pitts B**, **Lauchnor E**, Cappitelli F, **Stewart PS**
"Development of a laboratory model of a phototroph-heterotroph mixed-species biofilm at the stone/air Interface"
Front Microbiol., 2015; 6:1251.
Read abstract

Job opening: Post-doctoral Position in Neutrophil-Biofilm Interactions

Phil Stewart, CBE-affiliated professor in chemical and biological engineering, is recruiting for a post-doctoral fellow to research neutrophil-biofilm interactions. Experience with leukocyte biology is desired. For more information and guidance on how to apply see the MSU job posting at http://jobs.montana.edu:80/postings/4792

Education

Engineering a perfect fit

MSU-CBE faculty member, **Abigail Richards**, associate professor of chemical and biological engineering, was recently featured in the spring 2016 edition of Montana State University's *Mountains & Minds* magazine. The article "Engineering a perfect fit," highlights Richards' climb through the ranks of the chemical and biological engineering department, starting as a visiting scholar to now, where she is a driving force behind the department's increased student enrollment.

It was 2002 when Richards landed at the Center for Biofilm Engineering in Montana State University's College of Engineering. It was a move that she assumed would be temporary. Though she was a visiting scholar working with another outsider, Richards said she felt right at home from the beginning. "It was exciting to be at MSU because I wanted to expand my horizons, and I got to meet a whole new group of fabulous scientists and interdisciplinary thinkers in my field," said Richards, who grew up in Washington. "The whole community here, made it a great place for me."

The College of Engineering responded in kind, bringing her on as a tenure-track faculty member in 2007 and tapping the then 31-year-old Richards to teach the rigorous program's entry-level courses and introduce students to the world of chemical engineering. She helped transform a freshman-level course typically enrolled by 40-some students into a class of more than 170 students.

Read more about Richards in *Mountain & Minds*: "Engineering a perfect fit"

College of Engineering Awards

Brent Peyton, a professor in MSU's Department of Chemical and Biological Engineering, was recently honored with the College of Engineering's Distinguished Professorship award at its annual awards ceremony on May 4, 2016.

In addition to Peyton's duties as a professor in the chemical and biological engineering department, he is the director of MSU's Thermal Biology Institute, and an affiliated faculty member of the Center for Biofilm Engineering. Peyton's research focus is on extremophilic bioprocessing, in situ biocatalyzed heavy metal biotransformations (Se, Cr, U), and growth of algae and fungi for biodiesel production in natural and engineered biological systems.

As a COE Distinguished Professor, Peyton will receive an annual award of $5,000 per year for five years and is expected to give an inaugural public lecture during the first year of the professorship. Awardees hold the title of Distinguished Professor and receive funding for a 5-year term. Peyton was recognized for his long-standing record of excellence in research, teaching and mentoring, professional outreach to the State of Montana and MSU, and integrating learning, discovery and engagement.

Peyton was recently awarded a prestigious $1 million grant from the W.M. Keck Foundation.

Peyton and other MSU researchers will use the money to expand their research into how microorganisms thrive in the hostile conditions of Yellowstone's hot springs. Their work has the opportunity to lead new discoveries in medicine, energy, materials and other fields.

Read the related article on Peyton's prestigious $1 million grant from the W.M. Keck Foundation at *MSU News*: http://www.montana.edu/news/15946/msu-team-awarded-keck-foundation-grant-to-study-extreme-yellowstone-microbes

Thesis Alert

"Nitrogen removal and associated greenhouse gas production from carbon limited synthetic wastewater in lab scale treatment wetlands," successful thesis defense by **Christopher Allen**, PhD candidate, civil engineering, May 20, 2016.
Read abstract

View thesis database

Employee News

New Staff

The CBE recently welcomed new staff member **Joseph Parchen.** Joey replaces Peg Dirckx as the CBE's visual communications specialist and serves as the CBE's go-to person for graphics and communication needs. His role provides leadership and expertise in visual and multimedia communications and editing to extend the CBE's standing as a world-leading institution for biofilm research, education, methods development, and industrial partnership. Joey has over 10 years of experience designing print and digital media. He looks forward to the opportunity to apply his graphics experience to the disciplines of science and engineering.

Outreach

Phil Stewart, professor of chemical and biological engineering, recently conducted an interview on biofilms for *Radio Health Journal*. The 12-minute segment aired on March 27, 2016 and featured Stewart, Dr. Randy Wolcott, and Bill Soukup. Wolcott is the medical director of the Southwest Regional Wound Care Center in Lubbock, Texas and a long-standing CBE collaborator. Bill Soukup is the president of Scientific Biofilm Solutions. Stewart presented an overview of biofilms including where they grow and how they impact public health.

Radio Health Journal is a weekly radio magazine that features interviews with guests that have expertise and real-world experience regarding current issues in health and medicine. The program is aired on close to 500 radio stations throughout the country. To listen to Stewart's RHJ interview, go to: http://mediatracks.com/shows/RHJ_16-13.mp3

CBE Industrial/Agency Visits

The following CBE personnel hosted the following industry and agency visitors:

Dr. Fernanda Martins, Development Engineer, 3M Infection Prevention Division, Sumaré, Brazil, April 20–21, 2016. CBE Host: Diane Walker, Research Engineer.

Mike Healey, Dave McDonald, and Tim Schroeder from Kohler, April 27, 2016. CBE Host: Paul Sturman, Industrial Coordinator.

Cliff Bradley, President, Montana BioAgriculture, Inc. Missoula, MT, May 5, 2016. CBE Host: Matthew Fields, CBE director.

Jean-Yves Delannoy and Ahmed Alsayed from Solvay, Bristol, PA, May 9, 2016. CBE Host: Paul Sturman, Industrial Coordinator.

Steven Markovich, Arun Bose, and Djuna Gulliver from US Department of Energy (DOE) National Energy Technology Lab, South Park Township, PA, May 11, 2016. CBE Host: Matthew Fields, CBE director.

People in Action

Adrienne Phillips, assistant professor, civil engineering, presented "Biomineralization sealing technology: A technology developed in Montana," Montana Energy Conference, Billings, MT, March 30, 2016.

Darla Goeres, associate research professor, chemical & biological engineering, presented "New proposed standard for measuring biofilm resistance on antimicrobial treated textiles," ASTM subcommittee E35.15 meeting, San Antonio, TX, April 11–13, 2016.

Phil Stewart, professor, chemical & biological engineering, as an invited session moderator and speaker presented the following research:

"Biofilm-host interaction in chronic wounds," World Healing Society meeting, Atlanta, GA, April 13, 2016.

"Biofilms in wounds…What we know and don't know," at jointly held Society for Advanced Wound Care meeting, Atlanta, GA, April 14, 2016.

Joe Seymour, professor, chemical and biological engineering, as an invited platform speaker presented "Hydrodynamics mediates structure during abiotic growth of a calcite precipitate barrier: A combined MRI/CT study," at Interpore: 8th International Conference on Porous Media Annual Meeting, Cincinnati, OH, May 9–12, 2016.

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