

News Update: April 2015 Volume 18, Issue 2

Industry Highlights

New Industrial Associate

The CBE welcomes **SANUWAVE Health** as its newest small business member.

SANUWAVE Health, Inc. is an emerging leader in the development and commercialization of a high-energy and focused shock wave technology that is used in devices for the repair and regeneration of bones, muscles, tendons and skin, and for the separation of solids and fluid in non-medical systems. **Julian Cioanta** is the CBE's designated representative at SANUWAVE Health. Read more about the company at: <http://www.sanuwave.com>

View the CBE's [list of Industrial Associates](#)
Read about the CBE's [Industrial Associates Program](#)

Research Highlights

Proven in the field: Microbially induced fracture sealing

A successful field-scale experiment marked a significant milestone in CBE's development and control of biofilm processes that mitigate unwanted leakage pathways near wells. The potential for upward leakage of gas and fluids through wells poses a major environmental risk, especially in depleted oil and gas reservoirs where large numbers of abandoned wellbores are often present. When compromised, the near-wellbore environment can become a key leakage pathway for CO₂, methane and fluids to migrate to the surface or into functional aquifers above, leading to potential atmospheric release of greenhouse gases or damage to drinking water aquifers. [Read more](#)

2015 MSU Student Research Celebration

Montana State University's annual Student Research Celebration was held on Thursday, April 9, 2015. Many of MSU's undergraduate and graduate students shared their research at this annual event held in the ballrooms of the Stand Union Building (SUB). Among the students who prepared posters, numerous Center for Biofilm Engineering students presented results of their research.

[Now available: Fifteenth Knowledge Sharing Article \(KSA\) on standardized methods](#)

KSA-SM-15: Disinfectant test results: How to average across laboratories

The CBE Standard Biofilm Methods Lab (SBML) presents their fifteenth knowledge sharing article (KSA) on standardized methods “Disinfectant test results: How to average across laboratories.” A comprehensive assessment of a disinfectant product often entails multi-laboratory testing, in which case the individual test outcomes may be averaged across the laboratories. This article is a review of techniques for averaging across laboratories.

We describe and compare popular averaging techniques and recommend the one that seems most appropriate in the context of disinfectant testing. The recommendation is based on the statistical literature and our many years of experience in analyzing data from multi-laboratory studies. We assume that all disinfectant tests conducted by all laboratories were judged by the study director to follow the pre-specified test protocol closely enough to justify calculation of an overall average.

[View KSA-SM-15 and the entire list of KSAs](#)

[Latest CBE Publications](#)

Benton HP, Ivanisevic J, Mahieu NG, Kurczy ME, Johnson CH, **Franco L**, Rinehart D, Valentine E, Gowda H, Ubhi BK, Tautenhahn R, Gieschen A, **Fields MW**, Patti GJ, Siuzdak G
“Autonomous metabolomics for rapid metabolite identification in global profiling”
Anal Chem., Jan 2015; 87(2):884–891.

Eggers MJ, Moore-Nall AL, Doyle JT, Lefthand MJ, Young SL, Bends AL, Crow
Environmental Health Steering Committee, **Camper AK**
“Potential health risks from uranium in home well water: An investigation by the Apsaalooke (Crow) tribal research group”
Geosciences, 2015; 5(1):67–94.

Hwang C, Copeland A, Lucas S, Lapidus A, Barry K, Glavina Del Rio T, Dalin E, Tice H, Pitluck S, Sims D, Brettin T, Bruce DC, Detter JC, Han CS, Schmutz J, Larimer FW, Land ML, Hauser LJ, Kyrpides N, Lykidis A, Richardson P, Belieav A, Sanford RA, Loeffler FE, **Fields MW**
“Complete genome sequence of *Anaeromyxobacter* sp. Fw109-5, an anaerobic, metal-reducing bacterium isolated from a contaminated subsurface environment”
Genome Announc., Jan 2015; 3(1):e01449–14.

Kurczy ME, Zhu ZJ, Ivanisevic J, Schuyler AM, Lalwani K, Santidrian AF, David JM, Giddabasappa A, Roberts AJ, Olivos HJ, O’Brien PJ, **Franco L**, **Fields MW**, Paris LP, Friedlander M, Johnson CH, Epstein AA, Gendelman HE, Wood MR, Felding BH, Patti GJ, Spilker ME, Siuzdak G
“Comprehensive bioimaging with fluorinated nanoparticles using breathable liquids”

Nat Commun., Jan 2015; 6:5998.

Ramsay BD, Hwang C, Woo HL, Carroll SL, Lucas S, Han J, Lapidus AL, Cheng JF, Goodwin LA, Pitluck S, Peters L, Chertkov O, Held B, Detter JC, Han CS, Tapia R, Land ML, Hauser LJ, Kyrpides NC, Ivanova NN, Mikhailova N, Pagani I, Woyke T, Arkin AP, Dehal P, Chivian D, Criddle CS, Wu W, Chakraborty R, Hazen TC, **Fields MW**

“High-quality draft genome sequence of *Desulfovibrio carbinoliphilus* FW-101-2B, an organic acid-oxidizing sulfate-reducing bacterium isolated from uranium(VI)-contaminated groundwater”

Genome Announc., Mar 2015; 3(2):e00092–15.

Trentin DS, Silva DB, Frasson AP, Rzhepishevskaya O, da Silva MV, **de Lancey Pulcini E, James G**, Soares GV, Tasca T, Ramstedt M, Giordani RB, Lopes NP, Macedo AJ

“Natural green coating inhibits adhesion of clinically important bacteria”

Sci Rep., Feb 2015; 5:8287.

View [Publications database](#)

Education

[CBE graduate student receives MSU College of Engineering Award](#)

Heidi Schoen, PhD candidate in chemical and biological engineering, was recently honored with the Raymond E. and Erin S. Schultz Emerging Fellowship award for the 2015-2016 academic year. The award is given to graduate students in MSU’s Department of Chemical and Biological Engineering in recognition of high academic performance in coursework and grades, and history of receiving awards, grants, and scholarships. The award also recognizes research accomplishments evidenced by publications and presentations.

Schoen earned her bachelor’s degree in chemical and biomolecular engineering from the University of Illinois at Urbana-Champaign. As a PhD candidate at MSU, she is studying fungal biofuels under the supervision of CBE-affiliated faculty member **Brent Peyton**, professor in chemical and biological engineering.

Thesis Alert

“The application of mass spectrometry-based ‘omics technologies to investigate environmental interactions of microbial systems,” successful thesis defense by **Michelle Tigges**, PhD candidate, chemistry & biochemistry, Montana State University, March 5, 2015

[Read abstract](#)

“Biofilm-induced carbonate precipitation at the pore-scale,” successful thesis defense by **James Connolly**, PhD candidate, chemical and biological engineering, Montana State University, March 24, 2015

[Read Abstract](#)

“Understanding *Escherichia coli* O157:H7 presence, pervasiveness, and persistence in constructed treatment wetland systems,” successful thesis defense by **Rachel Van-Kempen Fryling**, PhD candidate, microbiology & immunology, April 16, 2015

[Read abstract](#)

“Evaluation of a green alga isolate for growth and lipid accumulation in coal bed methane production water from the Powder River Basin,” successful thesis defense by **Logan Hodgskiss**, master's candidate, civil engineering, April 17, 2015

[Read abstract](#)

View [Thesis database](#)

Outreach

Visiting Researchers

Melanie Blanchette and **Mark Lund** from the Mine Water and Environment Research Centre (MiWER) at Edith Cowan University in Western Perth, Australia visited the Center April 3–April 15. Blanchette is a postdoctoral research fellow at MiWER. Her research focus is freshwater ecology including dryland rivers, tropical rivers, mine water, and environmental genomics. Lund is an associate professor in environmental management at Edith Cowan and a principal investigator at MiWER. His research interest is mine pit lakes, from remediation of acid mine drainage, through to the establishment and encouragement of biological communities and issues around their closure. During their visit they met with potential research collaborators and presented information on graduate student exchange opportunities at MiWER. Their CBE hosts were **Matthew Fields**, associate professor in microbiology and immunology and **Lisa Kirk**, assistant research professor, chemical and biological engineering.

Industrial Visitor

Dr. Lisa Cooper from Dow Microbial visited the Center on Tuesday, March 17. Cooper met with Darla Goeres, manager of the CBE standardized biofilm methods lab.