

08/02/2012

Tuesday
August 7

Optional Session:
Biofilm Modeling

8:00 a.m.–5:00 p.m.

EPS 108

Montana State University

Cristian Picioreanu, Associate
Professor, Biotechnology, Delft
University of Technology**8:00–12:00****Part one topics:**Basic modeling assumptions
Models for biomass processes
Solute processes
Examples of multidimensional
biofilm models*Break: 10:00–10:20*

**12:00–1:30 Lunch on own. See list
for options within walking
distance**

1:30–5:00**Part two topics:**Computer-aided exercises
Problem description and basic steps
in model setup with Comsol
Multiphysics
Models extensions by individual
participants

Wednesday
August 8

9:00–9:40**Experimental approaches to
investigate microbe-mineral
interactions and applied aspects
in subsurface environments**Andy Mitchell, Lecturer, Institute of
Geography and Earth Sciences,
Aberystwyth University, UK**9:40–10:20****Modeling microbial metabolism in
soils and aquifers: From genome
to pore to Darcy scales**Tim Scheibe, Staff Scientist, Pacific
Northwest National Laboratory**10:20–10:40 Break****10:40–11:20****Imaging microbial biofilm in
porous media: Technique and
applications**Dorthe Wildenschild, Associate
Professor, Chemical & Biological
Engineering, Oregon State
University**11:20–12:00****Multiscale modelling of biofilms in
porous media**Yohan Davit, Postdoctoral
researcher, Math Institute,
University of Oxford

**12:00–1:30 Lunch on own. See list
for options within walking
distance**

1:30–2:10**Lattice Boltzmann methods for
simulating complex flow and
transport at the pore-scale**Marcel Schaap, Associate Professor,
Environmental Physics, University
of Arizona, SWES**2:10–2:50****Title TBA**Tianyu Zhang, Assistant Professor,
Mathematics, MSU, CBE**2:50–3:10 Break****3:10–3:50****CBE overview**Al Cunningham, Professor, Civil
Engineering, MSU, CBE**4:00–5:00 CBE Tour****5:30–8:30****Banquet**Beall Park Art Center
415 North Bozeman Avenue
Bozeman, MT 59718

Thursday
August 9

9:00–9:40**A positivity-preserving numerical
method for a model of
bio-mineralization**Benito Chen-Charpentier, Professor,
Mathematics, University of Texas
at Arlington**9:40–10:20****Micro-scale numerical models for
biofilm and mineral formation in
porous media**

Cristian Picioreanu

10:20–10:40 Break**10:40–11:20****Title TBA**Robin Gerlach, Associate Professor,
Chemical & Biological
Engineering, MSU, CBE**11:20–12:00****Title TBA**Qi Wang, Professor, Mathematics,
University of South Carolina

**12:00–1:30 Lunch on own. See list
for options within walking
distance**

1:30–2:10**Pore-scale modeling of reactive
transport: Predicting Darcy-scale
behavior**Markus Hilpert, Professor,
Geography & Environmental
Engineering, Johns Hopkins
University**2:10–2:50****Productivity and equilibrium in
simple biofilm models**Isaac Klapper, Professor, CBE MSU,
Mathematics, Temple University**2:50–3:10 Break****3:10–4:10****Yellowstone tour introduction**Bruce Fouke, Professor, Geology,
Microbiology, Institute for
Genomic Biology, University of
Illinois Urbana-Champaign**4:10–5:00 Group discussion**

Friday
August 10

**Optional Yellowstone National
Park Tour**Pick up at the Homewood Suites in
Bozeman