

20th ACBM/NIST Computer Modeling Workshop
co-sponsored by ASTM Committees C01 (cement) and C09 (concrete)

DATE and LOCATION

Wednesday August 12, 2009 to Friday August 14, 2009
Lecture Room E, Administration Building
National Institute of Standards and Technology
Gaithersburg, Maryland 20899 USA

INSTRUCTORS

Edward Garboczi (coordinator), Dale Bentz, Jeffrey Bullard, Chiara Ferraris, Nicos Martys, and Paul Stutzman, NIST Materials and Construction Research Division
Barbara Lothenbach, EMPA, Switzerland (via web)
Jeff Davis, NIST Surface and Microanalysis Science Division
James Warren, NIST Metallurgy Division
Andrew Allen, NIST Ceramics Division
Lawrence Schwartz, Schlumberger Research, Boston, MA
Erik Schlangen, Delft Technical University

GENERAL DESCRIPTION

The workshop lectures will cover topics in the computational and experimental materials science of concrete and other materials, including simulation of microstructural development and prediction of physical properties. “Microstructure” ranges from nanometer to meter length scales, while physical properties include pressure-driven fluid flow, diffusion, rheology, mechanical properties, neutron scattering, scanning electron microscopy, and various X-radiation probes like diffraction and tomography. Close cooperation between computation and experiment is crucial for making progress in the materials science of concrete and so is an emphasis of the workshop. There will also be some coverage of the Virtual Cement and Concrete Testing Laboratory. The workshop will have a mixture of longer tutorial lectures and shorter (15 min) talks by the participants describing their current or proposed technical work.

WORKSHOP SCHEDULE (note: all times are in US Eastern Standard Time)

WEDNESDAY August 12, 2009 Lecture Room E, Administration Building

8:00-9:00 am Lecture No. 1.....Ed Garboczi
Workshop Welcome and Introduction, VCCTL, and other topics

9:00-9:15 Break

9:15-10:15 Lecture No. 2.....Paul Stutzman
Microstructure in Portland Cement Pastes and Concretes

10:15-10:30 Break

10:30-11:00 Lecture No. 3.....Jeff Davis
Advanced Characterization of Concrete

11:00-11:30 Workshop Participants Presentations (2)

11:30-12:45 pm Lunch, NIST Cafeteria

12:45-1:45 Lecture No. 4.....Larry Schwartz
Modeling and Transport in Sedimentary Rocks

1:45-2:00 Break

2:00-3:00 Lecture No. 5.....Andrew Allen
Neutron Scattering and the Materials Science of Concrete

3:00-3:15 Break

3:15-4:00 Lecture No. 6..... Nick Martys
Computational Fluid Flow Applied to Pipe and Other Systems

4:00-4:30 Workshop Participants Presentations (2)

4:30 NIST workshop bus leaves for Holiday Inn

THURSDAY August 13, 2009 Lecture Room E, Administration Building

8:00-9:00 am Lecture No. 7.....Barbara Lothenbach (via web)
Thermodynamic Models for Cement Hydration

9:00-9:15 Break

9:15-10:15 Lecture No. 8.....Jeff Bullard
Hydration and Microstructure Modeling: HydratiCA and THAMES

10:15-10:30 Break

10:30-11:30 Lecture No. 9Dale Bentz

Early Age Cracking of Concrete: Causes, Measurements, and Mitigation

11:30-12:45 pm Lunch, NIST Cafeteria

12:45-1:30 Lecture No. 10.....Ed Garboczi

Analyzing Particle Shape in 3-D

1:30-1:45 Break

1:45-2:30 Workshop Participant Presentations (3)

2:45 Bus to Building 226

2:50 - 3:50 Tour of Inorganic Materials Group Laboratories: SEM-XRD, X-ray CT, Rheology

3:50 Bus to Building 202

3:55-4:30 Tour Stop: Large Testing Machine and 9/11 WTC Steel

4:30 NIST workshop bus leaves for Holiday Inn (from Building 202)

FRIDAY August 14, 2009 Lecture Room E, Administration Building

8:00-8:45 am Lecture No. 11.....Nick Martys

Computational Rheology

8:45-9:00 Break

9:00-10:00 Lecture No. 12.....Clarissa Ferraris

Rheology of Concrete

10:00-10:15 Break

10:15-11:15 Lecture No. 13.....James Warren

Phase Field Modeling of Polycrystalline Materials

11:30-12:45 pm Lunch, NIST Cafeteria

12:45-2:00 Workshop Participant Presentations (5)

2:00-2:15 Break

2:15-3:15 Lecture No. 14.....Erik Schlangen

Fracture Modeling and Design of Experiments of Cement-Based Materials at the Meso-scale

3:15-3:30 Break

3:30-4:15 Workshop Participant Presentations (3)

4:15 Conclusion of workshop – questions and answers

4:30 NIST workshop bus leaves for Holiday Inn

4:30 and 5:00 NIST Shuttle leaves for Shady Grove Metro to downtown Washington, DC

Registration

The list of workshop participants will be finalized by **July 31, 2009**, which is the application deadline. On-line registration is available and is the preferred method of registration (<http://concrete.nist.gov/monograph/>, click button for "2009 Workshop," then "Registration"). If on-line registration is not used, then the enclosed form (see below) will need to be filled out for each potential participant and sent to the coordinator (post, fax, or e-mail) in lieu of using the on-line registration site. There is no registration fee.

Housing and Meals

A block of rooms has been reserved at the Gaithersburg Holiday Inn, at the rate of \$113 per night (plus 12% tax), single or double occupancy. The phone number to call for reservations is: VOICE: (301) 948-8900, FAX: (301) 258-1940 (www.higaithersburg.com). Please be sure to mention that you are with the "NIST Computer Modeling Workshop". You will need to make your reservations by **July 31, 2009** in order to be sure of getting the group rate. Daily transportation between the Holiday Inn and NIST will be provided by NIST (**pick-up at the hotel each day at 7:30 am**). Participants are responsible for all their own meals, including lunch at the NIST Cafeteria each day.

Getting to NIST

See the following web site for detailed information about getting to NIST (e.g., taxis, shuttles, restaurants) – http://www.nist.gov/public_affairs/visitor/visitor.htm. If workshop participants land in Dulles International Airport, a taxi can be taken directly to the Gaithersburg Holiday Inn at a cost of about \$70.00. Those persons flying into Reagan National Airport can take the Metro underground train directly to the Shady Grove stop in Gaithersburg (about \$3-\$6, depending on time of day--see signs in Airport station--Yellow line to Gallery Place, Red line to Shady Grove). A taxi may be taken from there to the Gaithersburg Holiday Inn for about \$15.00. Alternatively, a taxi can be taken directly to the hotel from Reagan National for about \$65.00. From Baltimore Washington International Airport, taxis cost about \$90.00 to Gaithersburg. Shuttles are somewhat cheaper – see the airport web site for details. Driving directions to NIST are included on the NIST web site.

Security

All workshop attendees must have a picture I.D. with them to be able to enter the gates, either riding on the bus from Holiday Inn or by themselves. A U.S. driver's license or passport is fine. A temporary NIST badge will be given to you on your first entrance to NIST, which, along with your picture I.D., will allow entrance into NIST for the rest of the workshop. So don't throw it away! And please wear the NIST badge at all times while within NIST.

Note: Non-US citizens are required to give some additional information. You will see a place for this on the on-line registration, and on the form below.

Direct all questions to the Workshop coordinator:

Edward J. Garboczi, NIST, 100 Bureau Drive, Stop 8615, Gaithersburg, MD 20899-8615 USA

Phone: (301) 975-6708 (office), (301) 990-6891 (fax)

Electronic Mail: edward.garboczi@nist.gov

Please register on-line (preferable) at <http://concrete.nist.gov/monograph/>, or else return this form to the workshop coordinator, no later than July 31 2009.

20th ACBM/NIST Computer Modeling Workshop Registration Form

Full Name and Title:

Institutional Affiliation:

Citizenship (necessary for NIST security):

Research Advisor (if student or post-doc):

Mailing Address:

Phone Number:

Fax Number:

E-Mail (please print clearly):

Will you be staying at the Holiday Inn?

Title for your 15-minute presentation on your technical work:

Purpose for coming to the Computer Modeling Workshop:

If you are not a US citizen, please supply the following additional information:

Date of birth (month-day-year):

City and country of birth:

Passport number and issuing country:

Employer/sponsor:

Citizenship (include dual citizenship if applicable):

Country of residence:

Are you a US permanent resident?

Gender: