Colburn Lab Building Spring Hours:

For the Winter session, Colburn Lab will be locked as follows:

- Monday through Thursday at 10:00pm all exterior doors except the one facing Drake Hall. The Drake Hall entrance will be locked at midnight.
- Friday at 5:00pm all exterior doors except the one facing Drake Hall. The Drake Hall entrance will be locked at 9:00pm.
- Saturday and Sunday only the exterior door which faces Drake Hall will be unlocked from noon to 8 PM. All other exterior doors will remain locked unless otherwise requested for a special event.

- **Bill N. Baron Fellowship Award Nominations** are due by March 2, 2012. See attachment for more information.

Publications:

- **Catalysis research**: Department of Energy renews Synchrotron Catalysis Consortium grant
- **Solar Energy**: UD a partner in $18.5 million solar grant with Arizona State University
- **Prof. Jingguang Chen's** JACS paper on carbide electrocatalysts is highlighted in the Jan. 23 issue of Chemical & Engineering News. This is Prof. Chen's 3rd JACS paper in the past year on various topics in catalysis and electrocatalysis. (see attachment)
- **Anne Robinson** has been awarded the Van Lanen Award
- **UD Department of Chemical Engineering** changes name, prepares for centennial
- **The Neutron Scattering Society of America** has announced the 2012 NSSA fellows. (see attachment)
- **He can read any woodwind**: Helmers is Everyman of the clarinet family

**Future Department Events:**

- **CMET/MSEG Seminar**
  Thursday, February 23, 2012
  Kenneth Schweizer, University of Illinois at Urbana-Champaign
  11:00 am in Ewing Room, Perkins Student Center
  “Slow Dynamics in Soft Materials: From Nanoparticle Diffusion in Polymer Melts to Viscoelasticity and Kinetic Arrest in Dense Colloidal Suspensions”

- **AIChE Wilmington Local Section Event**
  Tuesday, February 28, 2012
  5:30pm at Clayton Hall
  Cost: $35 – Non members and guests
  $30 – AIChE Members
  $15 – Students and those between employment
  Prepay at Wilmington section website through Paypal: [www.wilmingtonaiche.org](http://www.wilmingtonaiche.org)
Jobs/Recruiting:
- The Department of Chemical and Biological Engineering (CBE) at the South Dakota School of Mines and Technology seeks exceptional candidates for a 9-month, tenure-track faculty position at the rank of Assistant, Associate or Full Professor.

These and other available positions can be found on the Chemical Engineering opportunity website (http://www.che.udel.edu/opp.html), so be sure to check it regularly.

Other Department Seminars:
- **POSE Seminar Announcement**  
  Dr. Tian-Jian Hsu, UD  
  Friday, February 10, 2012  
  3:00pm in 206/202 Cannon Lab  
  “Initial deposition and wave-resuspension of the fine sediment in the coastal environment – a numerical modeling study”

- Department of Physics and Astronomy  
  Dr. Mark E. Tuckerman, New York University  
  Monday, February 13, 2012  
  2:30pm in 219 Brown Lab  
  “Exploring the free energy landscapes of biomolecules and crystalline polymorphs”
CUSTOM FRAMEWORKS WITH TAILORED METAL VERTICES

Exceptionally porous metal-organic framework (MOF) compounds have been prepared by coupling large metal-biomolecule clusters with simple organic linker molecules, according to work published in Nature Communications (DOI: 10.1038/ncomms16168). The extreme porosity of MOF’s compared with other porous materials along with their potential application in gas storage and separation, catalysis, and other areas has driven extensive research and some commercialization efforts. Nearly all synthetic customization of the materials to date has focused on increasing the length and tuning structural properties of the organic linkers. Ji Hyun An and Nathaniel L. Rosi of the University of Pittsburgh, Joseph T. Hupp and Omar K. Farha of Northwestern University, and coworkers now report success with an alternative strategy: customizing the size of the metal vertices. The team coupled large metal-biomolecule clusters, specifically zine-adenine groups, with simple and relatively short dicarboxylate linkers to form bio-MOF-100. The team reports that the material exhibits high surface area (4,300 m²/g) and exceptional pore volume (4.3 cm³/g), which is some 20% larger than the previous record-setting MOF.—MJ

SIX STEREOCENTERS FORGED IN ONE STEP

Chemists starting out with a pair of reactants and a new copper chiral diamine catalyst have stitched together cyclohexanes with six contiguous stereocenters in a tandem [2+2+2] cycloaddition reaction (Angew. Chem. Int. Ed., DOI: 10.1002/anie.201107495). A team led by Hanmin Huang of the Lanzhou Institute of Chemical Physics, in China, accomplished the feat by coupling ketoesters with nitroalkenes. The cyclohexanes assemble in a domino fashion: A ketoester first forms a copper enolate intermediate, which adds one nitroalkene molecule and then another, followed by a ring-closing operation to yield a single diastereomer. Contiguous multiple stereocenters are a highly desirable structural motif found in natural and synthetic bioactive compounds, the researchers note. Two other groups have reported cyclohexanes with six contiguous stereocenters; Huang says, but either as a by-product or in low yield and without providing the absolute structures of the compounds. A compound with eight contiguous stereocenters is also known, he adds, although two steps were needed to make it. “Our method could be claimed to be a record for the synthesis of the most contiguous stereocenters in a molecule made in just one step,” Huang tells C&EN.—sr

NANOTUBE DETECTS ENZYME MOTION

Enzymes and nanotubes may seem unlikely partners in a molecular two-step. But by tethering lysozyme to the carbon nanotube in a field-effect transistor (FET), scientists are now able to electronically monitor the enzyme’s movements (Science, DOI: 10.1126/science.1213834). This approach gives researchers a new way to follow enzyme movement over relatively long periods of time—something that can be difficult to do with fluorescent techniques because of signal bleaching. Gregory A. Weiss, Philip G. Collins, and colleagues from the University of California, Irvine, modified T4 lysozyme, an enzyme that hydrolyzes polysaccharides in bacterial cell walls, by covalently attaching a pyrene anchor to one of its cysteine residues. The pyrene then associates via π–π interactions to the single-walled carbon nanotube that makes up the FET’s conducting channel. As the enzyme moves, the FET detects changes in electrostatic potentials. In this manner, the researchers were able to tune into two different hinge-bending motions in the enzyme: one that comes from the hydrolysis of the polysaccharide and one that arises from nonproductive binding events.—BH

LOW-COST METAL CARBIDE CATALYST SUPPORTS

Metal carbides capped with monolayer quantities of precious metals can serve as active hydrogen evolution catalysts, according to a study conducted at the University of Delaware (J. Am. Chem. Soc., DOI:10.1021/jacs.086506v). The work may lead to low-cost substitutes for platinum-based electrocatalysts and fuel-cell catalysts by drastically reducing the required loading of expensive metals. Electrolyzers and fuel cells offer energy-efficient and environmentally benign methods for producing hydrogen from water and combining hydrogen with oxygen to generate electricity, respectively. Lowering device costs by reducing dependence on platinum could broaden commercial use. So Delaware’s Daniel V. Esposito, Jingguang G. Chen, and coworkers prepared thin films of tungsten carbides (WC and W2C) with well-controlled surface stoichiometry and treated them with monolayer quantities of platinum. The team found that for hydrogen evolution, the platinum-coated films are nearly equal in catalytic activity to pure (bulk) platinum and are more stable than standard carbon-supported Pt catalysts. Palladium-coated films also exhibited high catalytic activities. The team is now studying ways to boost the catalyst surface area by using atomic layer deposition methods to prepare Pt–WC nanoparticles, Chen says.—MJ
The Neutron Scattering Society of America is pleased to announce the selection of its new 2012 NSSA Fellows.

Dr. Julie Borchers (NIST)
For insightful neutron investigations of magnetic materials, particularly interlayer exchange interactions phenomena in magnetic thin films and superlattices.

Prof. Robert Cava (Princeton University)
For outstanding applications of neutron diffraction to the understanding of complex materials, and advocacy for the field particularly among young scientists.

Dr. Charles Glinka (University of Delaware and NIST)
For development and operation of world-class capabilities for small angle neutron scattering in America.

Prof. Eric Kaler (University of Minnesota)
For enormous contributions to the science of soft matter and mentoring of young scientists in scattering science.

Dr. Roger Pynn (University of Indiana)
For outstanding contributions to neutron scattering instrumentation and research, and for service to the U.S. neutron community.

Dr. Steven Shapiro (Brookhaven National Laboratory)
For influential studies of phonons and phase transitions, as well as for contributions to the neutron scattering community

Dr. Gregory Smith (Oak Ridge National Laboratory)
For pioneering neutron scattering investigations of soft-condensed matter systems.
Prof. Haskell Taub (University of Missouri)
For sustained studies of the structure, phase transitions, and dynamics of adsorbed films using neutron scattering techniques and for training of a future generation of neutron scattering scientists and engineers.

Prof. Samuel Werner (NIST and University of Missouri)
For elegant neutron experiments contributing to the understanding of quantum physics and for his sustained efforts to promote neutron science.
Bill N. Baron served the University of Delaware and the photovoltaic community from 1975 to 1992 as a scientist, manager and deputy director at the Institute of Energy Conversion. Throughout his professional life Bill was especially interested in students and their education. He devoted many hours to teaching students how to carry out creative and effective research in photovoltaics. The Bill N. Baron Fellowship was established to assure that students would continue to benefit from Bill's concern about their education.

**Two Graduate Awards**

$2,000.00 each

**Requirements**
- Must be a graduate student at the University of Delaware with a cumulative index of 3.0 or above
- Must be carrying out or have recently completed an exceptional piece of supervised research in engineering, science or energy policy in the renewable energy field

**Nominations must include**
- One-page summary of the nominee's research project that describes their contribution to research, development or policy in renewable energy
- Letter of recommendation from nominator
- Short resume from nominee

**Deadline for nominations**

March 2, 2012

**Submit nominations to**

Paula Newton, Asst. to the Director  
Email: pnewton@udel.edu  
Institute of Energy Conversion  
Tel: 831-6221  
Fax: 831-6226