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Quasicrystal World Headed for Ames

Ames Lab & ISU to host 9th International Conference on Quasicrystals

Spin a globe and most people could quickly point to Beijing, Tokyo and Zürich and could probably locate Stuttgart and Bangalore, India, without too many problems. Okay, now how about finding Ames, Iowa?

Fortunately, Ames is as well known as the rest of those cities among quasicrystal researchers, thanks to the leading research that's taken place at Ames Laboratory over the past two decades. And that's why Ames is playing host to the Ninth International Conference on Quasicrystals next month. More than 150 researchers from 22 countries will be on hand for the event, May 22-26.

"This is the premier conference for this field, and it is only held every two to three years," says conference co-chair and materials chemist Cynthia Jenks. "The only other U.S. site was St. Louis in 1992, so we feel quite honored to serve as hosts. Ames Lab and Iowa State are internationally recognized for work in the field, and we are hosting the conference based on that strength."

The focal point of the conference, quasicrystals are metallic alloys that defy conventional rules of crystallography because the atoms are well-ordered, but not in a typical periodic manner. First discovered in 1982, quasicrystals were met with skepticism early on, but doubt has largely been displaced due to advances on many fronts to decipher these mysterious materials.

"The conference will look at all aspects of quasicrystals," says Jenks. "We've accepted 215 abstracts in more than a dozen areas of study. And for the first time, we've also invited scientists working in the broader area of complex intermetallic alloys."

Another first for the conference will be the awarding of the inaugural Jean-Marie Dubois Award, named for one of the key *continued on page 2*



Pat Thiel, left, holds the International Conference on Quasicrystals "official scepter," which has been passed from one conference organizing committee to the next since 1986. Thiel, Dan Sordelet and Cynthia Jenks are co-chairing the conference, which will bring more than 150 researchers from 22 countries to Ames, May 22-26.

researchers in the field. Dubois, director of research at the Centre National de la Recherche Scientifique in Paris, is a scheduled



Jean-Marie Dubois

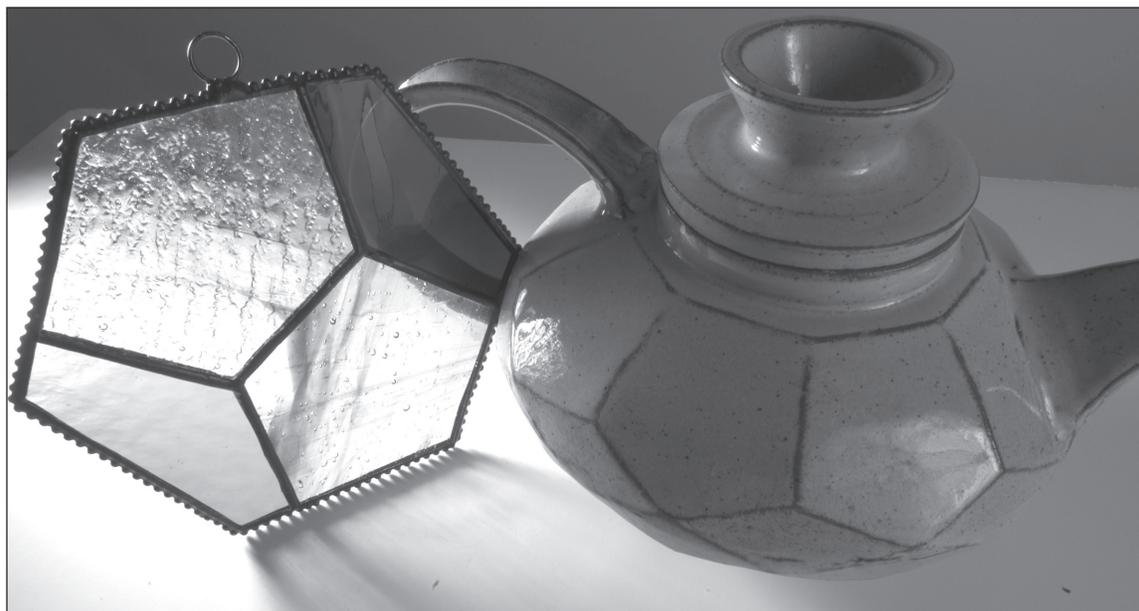
presenter at the conference and was recently named as the 2007 winner of The Minerals, Metals & Materials Society's (TMS's) prestigious

Robert Franklin Mehl Award.

"We created the Dubois Award as a way to honor Jean-Marie for his many contributions to the field and at the same time recognize others who are making a sustained effort in quasicrystal research," says Pat Thiel, conference co-chair, Ames Lab senior chemist and ISU Distinguished Professor of chemistry. "His career has been an amazing blend of science and engineering, and he has the rare ability to speak across disciplines, bringing new insights and deeper understanding to the many researchers he has worked with over the years."

Dubois' ties to Iowa State go beyond the award bearing his name. He has worked closely with Thiel's research group and was awarded an Honorary Doctorate of Science degree from ISU in 2000. The Dubois award, which includes a plaque and a monetary prize, is being administered by the ISU Foundation.

Joining Dubois on the conference program are several other key figures in quasicrystal research. Dan Shechtman, Denis Gratias and Alan Goldman will open the conference on May 22 with a special session on the discovery of quasicrystals, including little-known history. Shechtman, of the Technion in Israel, discovered the materials and worked with Gratias and others to announce the discovery in 1984. If



Conference Glassware

ICQ9 even has its own glassware. On the left is a suncatcher inspired by a dodecahedron quasicrystal grown by Ames Lab's Paul Canfield. At right is a teapot designed by English potter David Warrington, who produces pots with a symmetry to match the year of the conference. This year's pot has nine-sided symmetry and is available to conference participants by special order.

Shechtman's name sounds familiar to Lab employees, it's because he's been on site as a visiting scientist since the first of the year.

Goldman, Ames Lab's division director for Science and Technology and a senior physicist, will talk about his theoretical debate with Nobel Prize-winning scientist Linus Pauling over the existence of quasicrystals, and Dubois will talk about the future of the materials.

Another highlight of the conference will be a May 25 panel discussion on stabilization of quasicrystals. Led by Walter Steurer, Marc de Boissieu, Michael Feuerbacher, and Chris Henley, the session will specifically address thermodynamics, cluster stability, and the role of defects and disorder, including vacancies and phasons.

"The goal of this session is to take a broad look at this controversial area, identify common ground and terminology, and describe any consensus that might emerge within the group," Jenks says. "We'll also work to define the open problems and then identify spe-

cific experiments or calculations that are needed to help solve those problems."

Jenks added that the results of the panel discussion will be summarized as part of the conference proceedings, published in *Philosophical Magazine*.

There will also be an introductory session on Sunday, May 22, prior to the actual opening of the conference. Walter Steurer from the ETH- Zürich, will present a tutorial entitled "Quasicrystals - The Crystallographer's Point of View."

Ames Lab will be well represented on the scientific program with two speakers, Matt Kramer and YaQiao Wu, and 13 poster presenters. Besides presentations, poster sessions and discussions, all of which will take place at the Scheman Building, conference participants will have opportunities to sample Iowa and American culture. The group is scheduled to visit Living History Farms in Des Moines and also attend an Iowa Cubs minor league baseball game.

Pulling together an event of this

magnitude is no small task. Jenks, Thiel and fellow co-chair, senior scientist Dan Sordelet, have relied on a local organizing committee to carry out the leg work. That committee includes researchers Jim Anderegg, Matt Besser, Joe Burnett, Alan Goldman, Matt Kramer, Tom Lograsso, Shechtman, and Dong Mei Wu.

Program assistant Stacy Joiner is serving as the conference "quasi-secretary." The conference logo, drawn by former ISU student Melissa Meyers, shows two types of quasicrystals grown at the Lab, but that can also be interpreted to represent grain silos and corn. Besides the logo, a quasicrystal-inspired, stained-glass suncatcher was designed for the conference and will be presented to each attendee.

Complete details on the Ninth International Conference on Quasicrystals can be found on the conference Web site: <http://www.icq9.ameslab.gov>. ■

~ Kerry Gibson