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**Sent:** Tuesday, December 28, 2004 4:06 PM  
**To:**  
**Subject:** NanoExpress - January 2005



Providing information on technological advances, applications, and business news to nanotechnology professionals across the globe

Vol. 15

January 2005

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- **Nanonet Interview**

*Republished from Japan Nanonet Bulletin No\_29 2004/10/14*

Masahiro Irie - Professor, Department of Chemistry and Biochemistry, Graduate School of Engineering, Kyushu University



#### **When one million DVDs become a single disk -Development and application of diarylethenes-**

*Issued in Japanese: September 2, 2003*

When ultraviolet light hits a certain type of colorless crystal that looks like rock sugar, the crystal immediately turns red like a ruby. Some of these crystals turn blue, yellow or other colors. However, they instantly become colorless again when they are exposed to visible light.

These mysterious crystals are diarylethenes, developed in 1988 by Prof. Irie. The compounds have an ethylene group at the center of the molecule with two aryl groups each side. When the compounds are exposed to ultraviolet light, the hexatriene at the core of the molecules changes from an open-ring to a closed-ring structure. But when they are exposed to visible light, the hexatriene returns to its

## NanoExpress Masthead

Publisher: ATI, Inc.

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original structure. The change in its structure induces a change in the color of the crystal. These crystals become red, blue, yellow or green, depending on the type of their substituents. These organic molecules, which change colors with specific wavelengths of light, are called photochromic molecules. Unlike other synthetic photochromic molecules, diarylethenes have excellent thermal stability. The half-lives of their colored state are longer than 1,000 years at 30 °C. The color-bleaching cycles of diarylethene crystals can be repeated more than 10,000 times without degradation.

[To Read Entire Interview, Please Click Here](#)

### • Saxl Builds Global Bridges, One Molecule at a Time

*By Candace Stuart, Small Times Magazine Editor*



Dec. 3, 2004 - Ten years ago, Otilia Saxl launched the Center in Scotland for Nanotechnology. The Stirling-based center evolved in 1997 into the Institute of Nanotechnology, or IoN, and with Saxl as its chief executive has served as a catalyst for nanotech research and commercialization in Europe and beyond.

IoN is responsible for the Nanoforum network, the online resource AZoNano.com and the startup facilitator NanoMicroClub. Saxl talked with Small Times' Candace Stuart about the institute's past and future.

### What inspired the creation for the Center in Scotland for Nanotechnology?

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### • NASA Refocuses Competencies and Workforce: Nano an Emphasis

*Editorial Review by David Lackner, Nanotech Messenger*

NASA Ames, your local Silicon Valley NASA Center, has conducted a comprehensive, strategic review of its human capital to identify the critical competencies needed to support new NASA strategies, program priorities, and budgetary



- Jim Hurd,  
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limitations. This review indicated a need to rebalance the Center's workforce to align with the current NASA Exploration mission, vision, and strategy. Investments in computational physics, computation chemistry, information computing grid research, and fundamental computing architecture will be reduced. Traditional aeronautical research and wind tunnel testing will also be cut. Emphasis in the form of resources will be placed on "new information science technologies" such as nanotechnology, biotechnology, integrated systems health management, and robotics.

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### • Nano-Imprinting Promises Even Smaller Electronics

*Republished with permission from Science A GoGo*

In a discovery that could lead to dramatically smaller computer chips and other electronic components, Princeton scientists have found a way to mass produce devices that are so small they are at the limit of what can be viewed by the most powerful microscopes. The


achievement is an advance over current techniques, which require expensive and time-consuming procedures to create anything so small. The new technique offers a relatively simple and low-cost production method. In addition, the scientists achieved unprecedented success in packing the minute structures into dense clusters.

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### • The China Price

U.S. manufacturers have long complained of competing against the "China price"; the price offered by Chinese firms availing themselves of super-low wages in their own country. The U.S. companies that are still trying to compete are experiencing ferocious competition, and at best, razor-thin margins.



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The U.S.-China Economic & Security Review Commission

held a conference last summer which discussed the devastation Chinese competitors are inflicting on U.S. industries. The ensuing report outlined how current trends are not just a trade issue for the US, but a matter of long-term economic health and national security. To fully understand the impact China has on U.S., we invite you to read *Business Week's* "Special Report - The China Price."

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- **Gyricon is Xerox's poster child for copy company's new nano image**

*By Jack Mason, Small Times Correspondent*

It looks a bit like an oversized Etch-a-Sketch, but the wireless, electronic-ink signs that Xerox subsidiary Gyricon LLC displayed at the corporation's Park Avenue offices last week are the most commercial example of small tech springing from the "The Document Company."

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