

- [ScienceWatch Home](#)
- [Inside This Month...](#)
- [Interviews](#)

- Featured Interviews
- Author Commentaries
- Institutional Interviews
- Journal Interviews
- Podcasts

**Analyses**

- Featured Analyses
- What's Hot In...
- Special Topics

**Data & Rankings**

- Sci-Bytes
- Fast Breaking Papers
- New Hot Papers
- Emerging Research Fronts
- Fast Moving Fronts
- Corporate Research Fronts
- Research Front Maps
- Current Classics
- Top Topics
- Rising Stars
- New Entrants
- Country Profiles

**About Science Watch**

- Methodology
- Archives
- Contact Us
- RSS Feeds



Interviews

Analyses

Data & Rankings

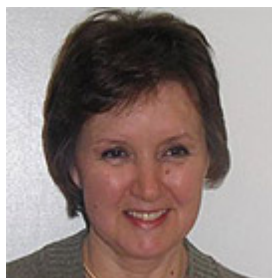
2009 : April 2009 - Fast Breaking Papers : Eugenia Kumacheva & Zhihong Nie

**FAST BREAKING PAPERS - 2009**

April 2009



**Eugenia Kumacheva & Zhihong Nie talk with ScienceWatch.com and answer a few questions about this month's Fast Breaking Paper in the field of Materials Science.**



**Article Title: Patterning surfaces with functional polymers**

Authors: Nie, ZH;Kumacheva, E

Journal: NAT MATER, Volume: 7, Issue: 4, Page: 277-290, Year: MAR 2008

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**SW: Why do you think your paper is highly cited?**

Patterned polymer surfaces have an extremely broad range of applications. This paper provides a comprehensive review of the current state-of-the-art in the area of surface patterning of functional polymers. It also offers a critical comparison of existing patterning methods with the emphasis on methods, applications, and the challenges posed by each method. These features are of great interest to the scientific community.

**SW: Does it describe a new discovery, methodology, or synthesis of knowledge?**

This is a review paper which highlights recent advances in both top-down and bottom-up patterning of polymers using photolithography, printing techniques, self-assembly of block copolymers, and instability-induced patterning. This paper outlines the challenges and future directions from the point of view of both applicability and strategies for the surface patterning of polymers.

**SW: Would you summarize the significance of your paper in layman's terms?**

The emphases of this review are the methods of polymer patterning and the applications of patterned surfaces in electronics, optics, and bio-related research. The main objective of this review was to provide a reader with sufficient information and guidelines for the selection of a suitable patterning method for his/her work.



Coauthor:  
Zhihong Nie

**SW: How did you become involved in this research, and were there any problems along the way?**

We work in the field of polymer materials science in which the role of functionalized polymer surfaces is

critically important. Even though surface patterning is in its mature stage, many challenges still exist. For example, the fabrication of complex 3D structures with spatial distribution of chemical functionalities still remains a big challenge.

**SW: Do you foresee any social or political implications for your research?**

The importance of our paper originates from the applications of functional patterned surfaces, which range from data storage to organic light-emitting devices (OLED) to the controlled growth and differentiation of stem cells.

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KEYWORDS: DIP-PEN NANOLITHOGRAPHY; COPOLYMER THIN-FILMS; 3-DIMENSIONAL PHOTONIC CRYSTALS; BLOCK-COPOLYMERS; NANOIMPRINT LITHOGRAPHY; IMPRINT LITHOGRAPHY; LIQUID-CRYSTAL; INTERFERENCE LITHOGRAPHY; CONVECTION PATTERNS; PLASTIC ELECTRONICS.

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[back to top](#) 

2009 : April 2009 - Fast Breaking Papers : Eugenia Kumacheva & Zhihong Nie

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