



## Methods and Compositions for Forming Aperiodic Patterned Copolymer Films

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**The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing methods of using block copolymers to replicate patterns with irregular features.**

### Overview

As the development of nanoscale devices increases, the need for materials and methods that can duplicate nanoscale patterns over large areas is growing. Block copolymer materials are useful in nanofabrication because they self-assemble into distinct domains with dimensions in the tens of nanometers or even lower. However, the use of directed self-assembly of block copolymers to replicate patterns has thus far been limited to replicating periodic patterns.

### The Invention

UW-Madison researchers have developed methods of using block copolymers to replicate patterns with irregular features. Block copolymer materials are deposited onto patterned substrates, and then components in the copolymer material are ordered to replicate the pattern. The ordering may be facilitated through the use of blends of the copolymer material and/or by configuring substrate patterns so that regions of the substrate pattern interact in a highly preferential manner with at least one of the components in the copolymer material.

### Applications

- Nanoscale lithography

### Key Benefits

- Able to replicate patterns with irregular features
- Masks may be formed for further processing steps, such as in semiconductor processing.
- Functional features, such as nanoscale conductive lines, may be formed in the block copolymer material.
- Copolymer material may be distributed non-uniformly over the surface.

### Tech Fields

- [Materials & Chemicals : Polymers](#)
- [Semiconductors & Integrated Circuits : Lithography](#)

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