

A New Class Of Non-chemically Amplified Molecular Photoresists For Next Generation Integrated Circuits (Ics) Technology

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ABSTRACT

The present invention describes the design and development of new class molecular n-CAR resists for micro/nano patterning applications. The synthesized n-CAR resists are sensitive to the light and radiations and are able to pattern 10 μm -sub 20 nm isolated dense line features under various lithography wavelength tools including EUV (13.5 nm), DUV (254 nm), i-line (365 nm), electron beam (e-beam) and helium ion beam. This invention addresses many of the road blocks in semiconductor Industries for fabricating nano electronic devices with 20 nm nodes and beyond.

KEY APPLICATION AREAS

- 1.Semiconductor photolithography.
- 2.Integrated circuit (IC) manufacturing.
- 3.Microelectronics and nanoelectronics fabrication.
- 4.Advanced lithography (EUV, DUV, e-beam, helium ion, i-line).
- 5.High-resolution micro/nano patterning.
- 6.Next-generation semiconductor materials.

POTENTIAL USE

- 1.Fabrication of next-generation ICs using non-chemically amplified molecular photoresists.
- 2.High-resolution patterning (10 μm to 20 nm) for semiconductor devices and nanoelectronics.
- 3.Lithography using EUV, DUV, i-line, e-beam, and helium ion beam for advanced chip fabrication.

4. Production of isolated and dense line patterns for sub-20 nm technology nodes.

5. Micro/nano device fabrication requiring positive- or negative-tone photoresists with high sensitivity and resolution.