

## Nanoimprint Lithography: Technology, Applications And Commercialization -- Today And Future

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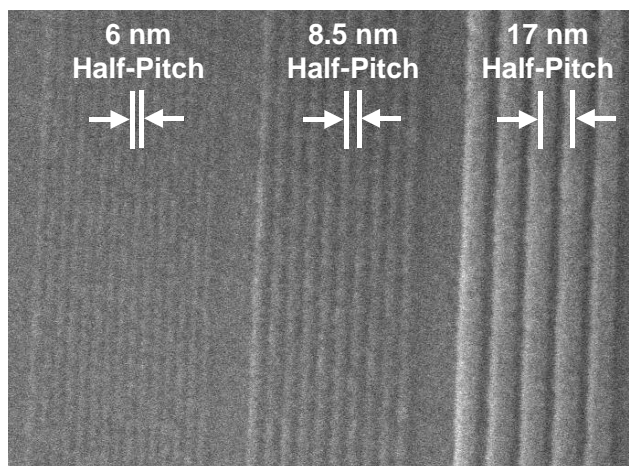
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Since the proposal of nanoimprint lithography (NIL) as a low-cost high-throughput sub-10-nm manufacturing method in 1995 [1], the field has been growing rapidly in research, applications and commercialization in the past 11 years. The talk will present author's bird-eye view in these areas, as well as future potential and new directions.

Particularly, the talk will address (a) NIL progresses in minimum feature size (6 nm half-pitch), printing areas (over 50 in-sq), alignment (sub-20 nm), pattern shapes (2D and 3D), materials and masks, (b) NIL applications in different disciplines, such as nanoscale electronics (nano-MOSFETs and SRAMs), photonics, displays, data storage (optical and magnetic), biotech, chemical synthesis and advanced materials, and (c) commercialization of NIL technologies.

The talk will conclude that the success of NIL in its first 10 years has spectacular. But it is still just a beginning; we haven't seen anything yet! NIL will serve as an enabling ubiquitous manufacturing engine to propel future research in nanotechnology, future manufacturing of micro/nanostructures, and hence future discoveries and commercialization in nanotechnology.

[1] S. Y. Chou, P. R. Krauss, and P. J. Renstrom, *Appl. Phys. Lett.*, **67** (21), 3114 (1995)



6 nm half-pitch resist grating by photo-curable nanoimprint lithography (NIL). Austin MD, Zhang W, Ge HX, Wasserman D, Lyon SA, Chou SY, *Nanotechnology* 16 (8): 1058-1061, 2005.