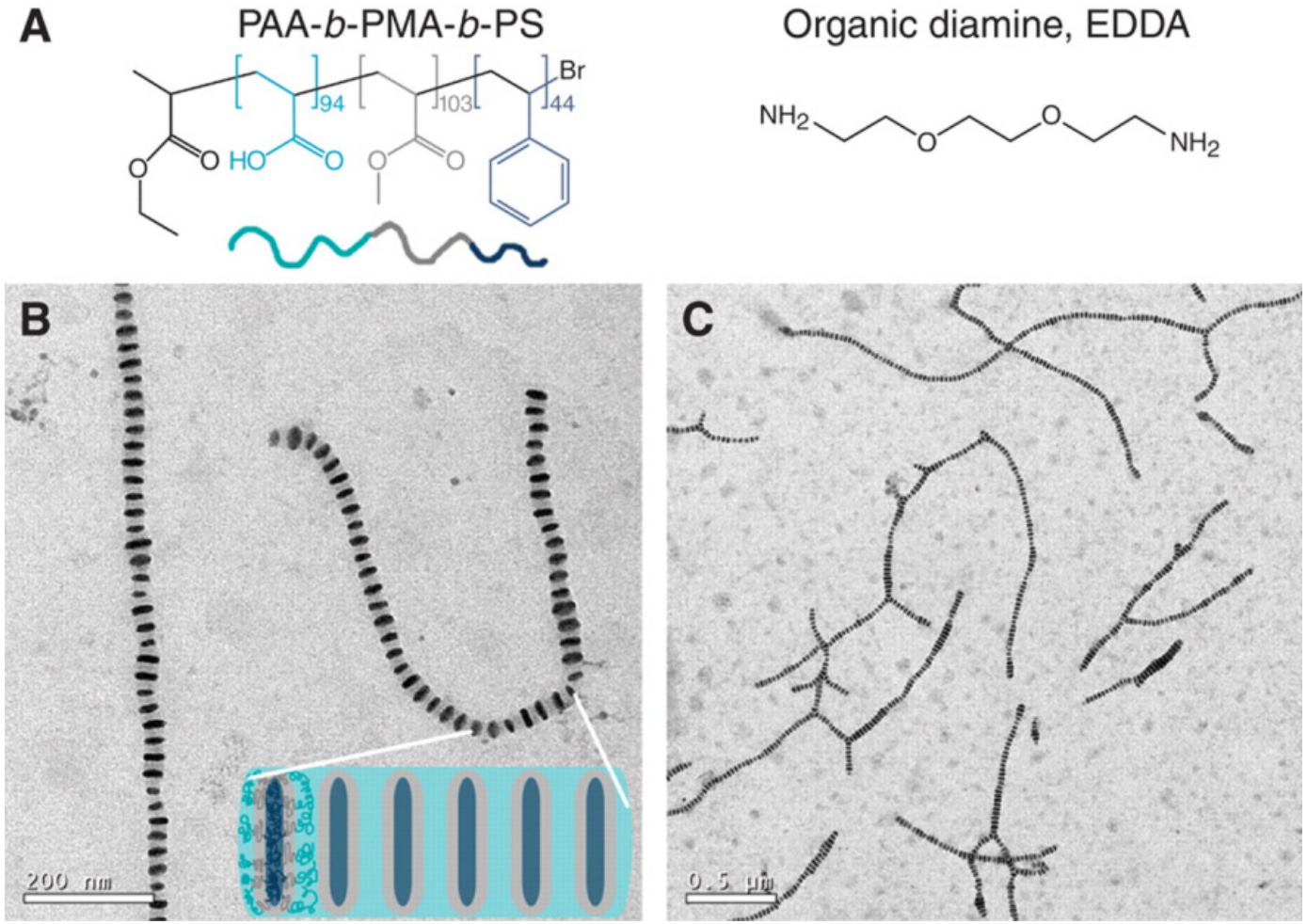
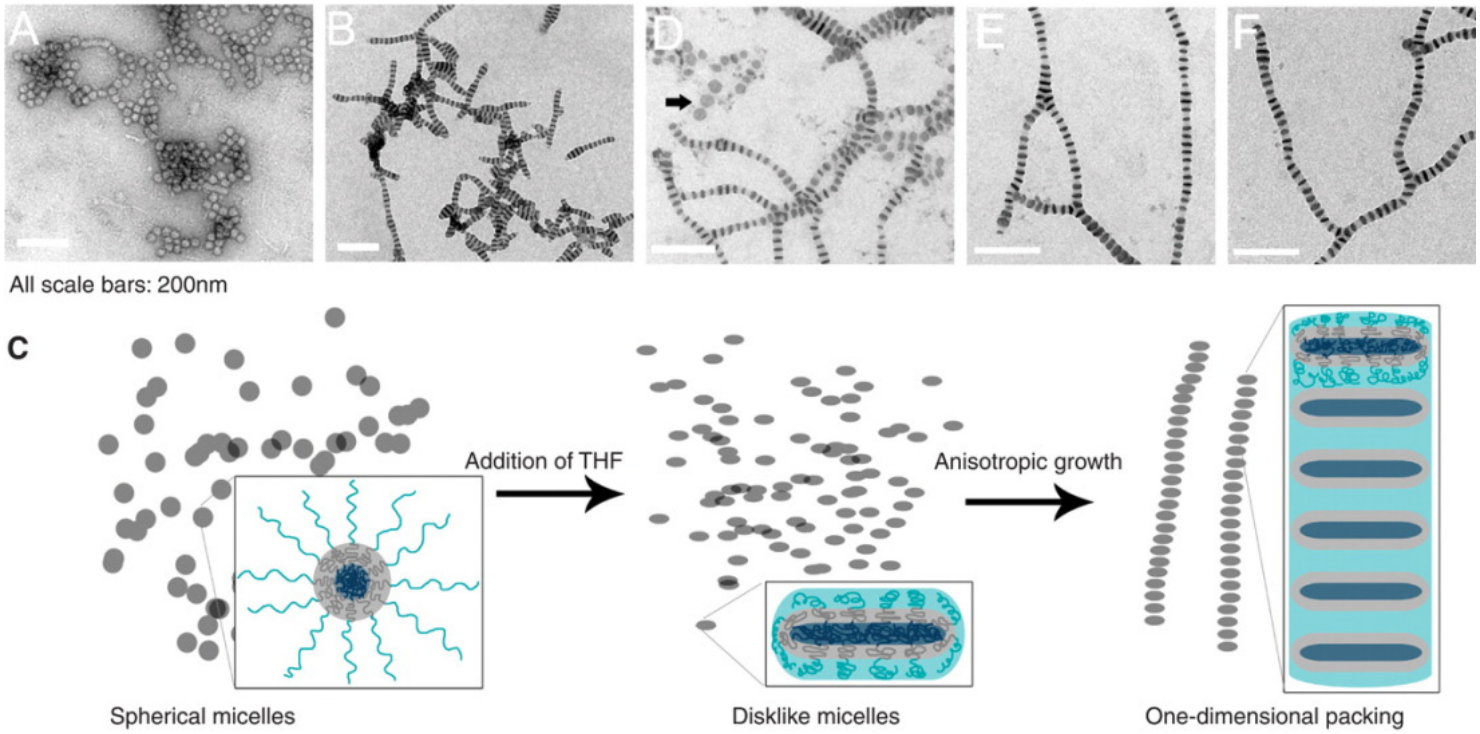
Block copolymer templating and lithography



Use of solvents and counterions to control assembly

H. Cui, Z. Chen, S. Zhong, K. L. Wooley, and D. J. Pochan, Block copolymer assembly via kinetic control, Science 317 (2007) 647.

Block copolymer templating and lithography



Spherical micelles formed initially transform to one-dimensional structures, as the discs which form stack on each other.

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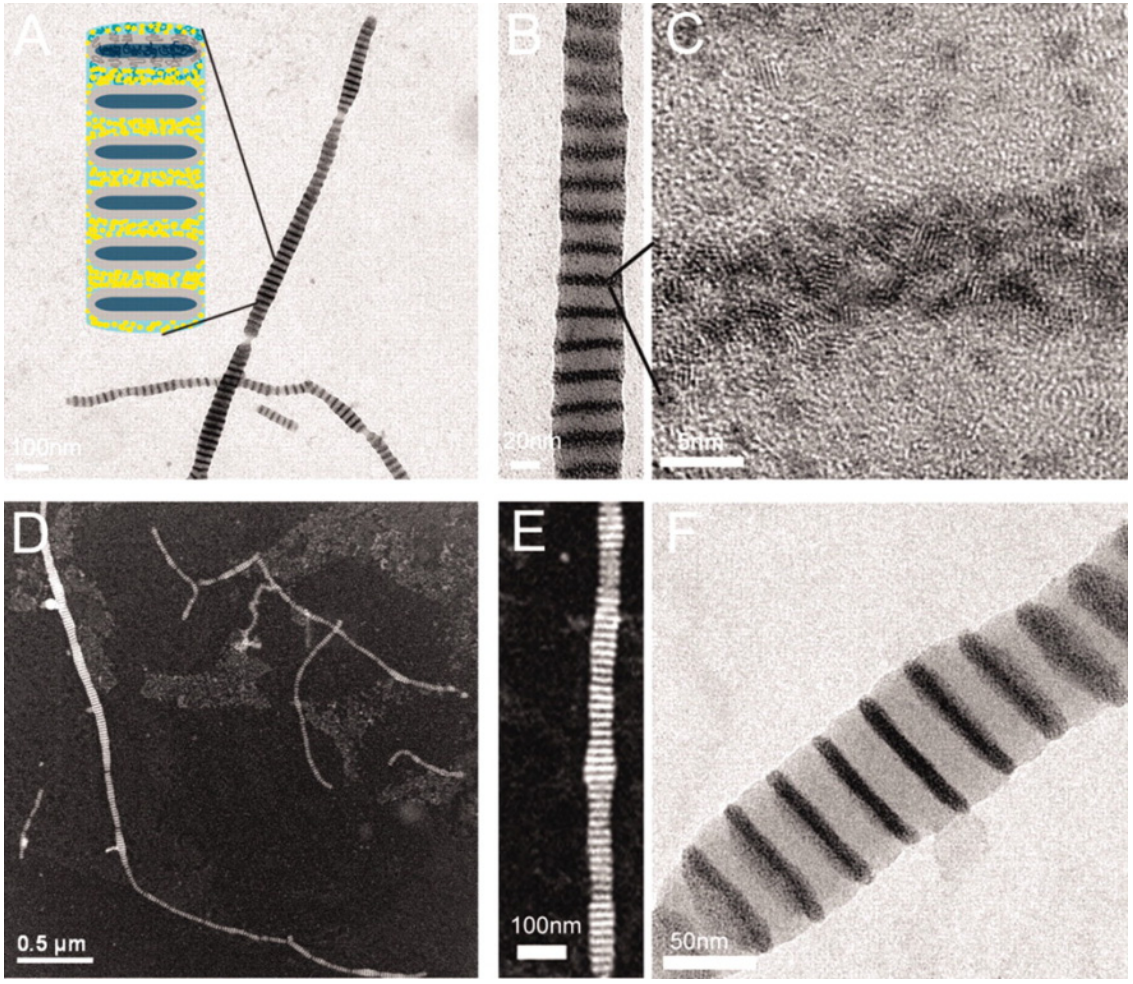

Gold nanoparticles preferentially go to the charged regions of the micelles. Polyamine-functionalized gold nanoparticles used as counterions in F.

H. Cui, Z. Chen, S. Zhong, K. L. Wooley, and D. J. Pochan, Block copolymer assembly via kinetic control, Science 317 (2007) 647.

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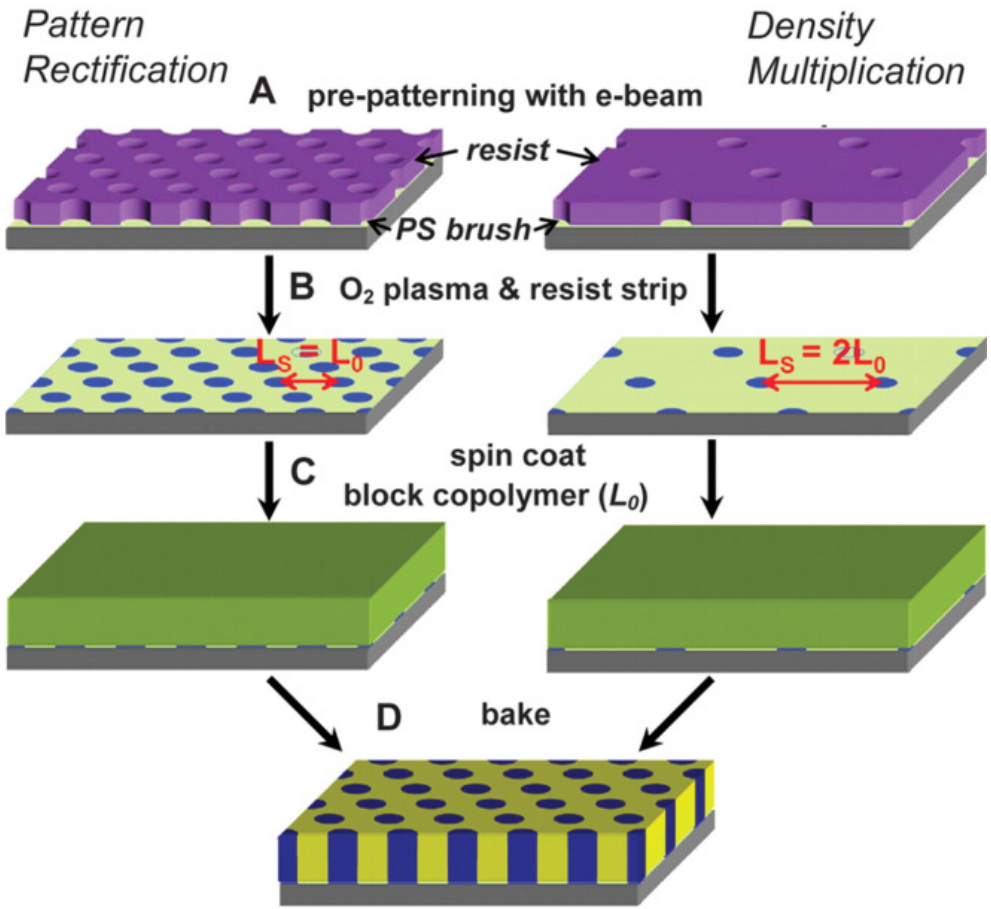
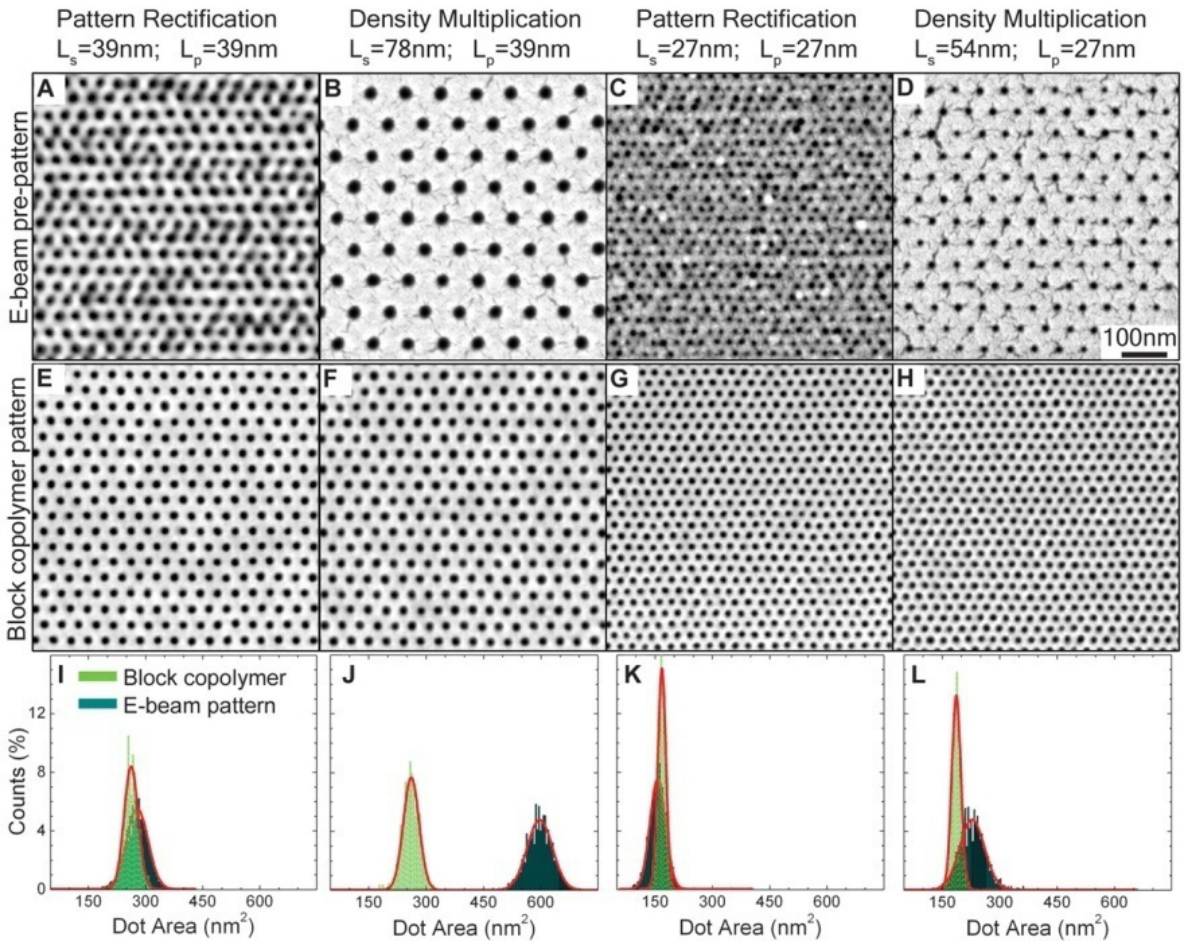


R. Ruiz, H. Kang, F. A. Detcheverry, E. Dobisz, D. S. Kircher, T. R. Albrecht, J. J. de Pablo, P. F. Nealey, Density multiplication and improved lithography by directed block copolymer self-assembly, Science 321 (2008) 936.

Block copolymer templating and lithography

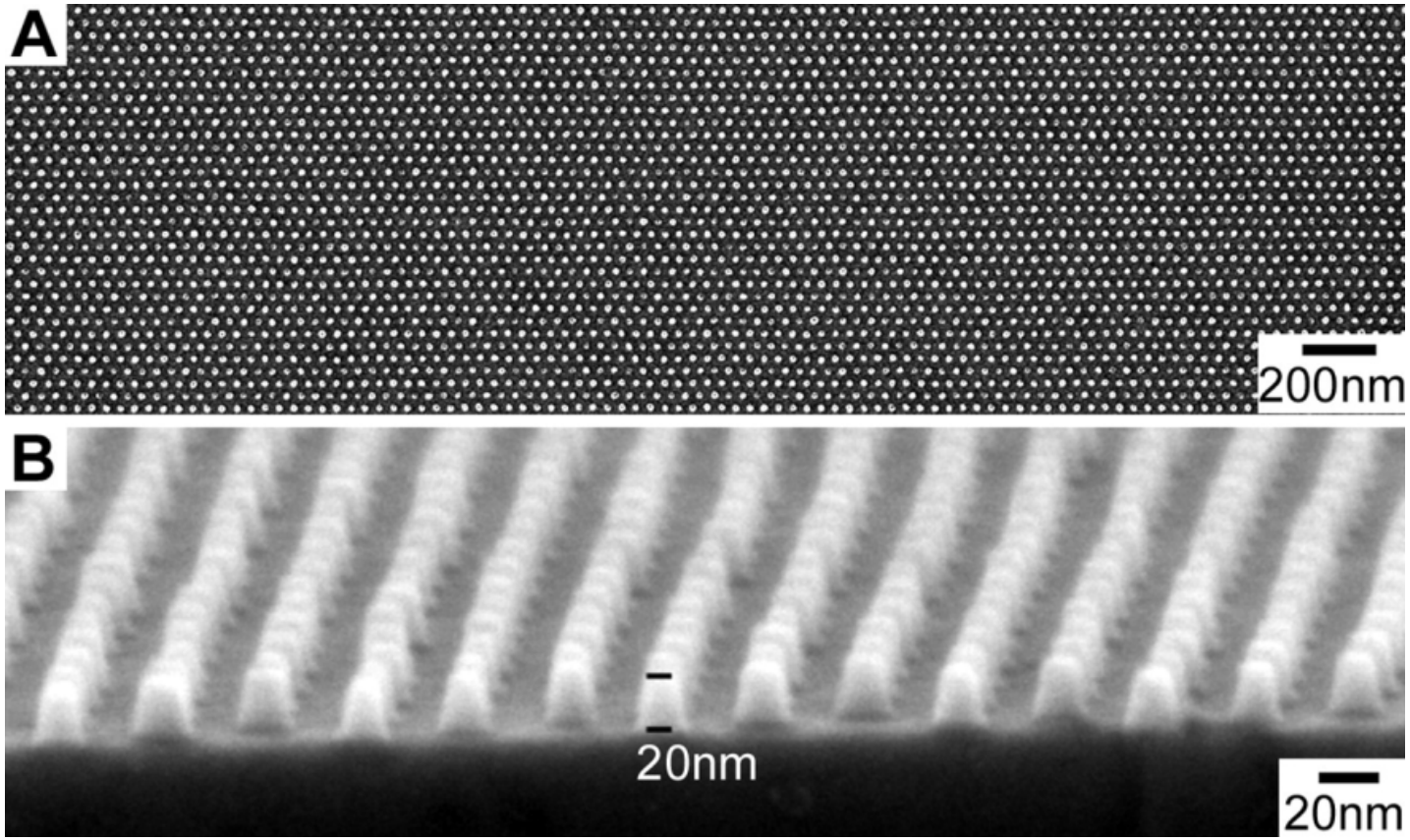


Photoresist

Block copolymer

R. Ruiz, H. Kang, F. A. Detcheverry, E. Dobisz, D. S. Kircher, T. R. Albrecht, J. J. de Pablo, P. F. Nealey, Density multiplication and improved lithography by directed block copolymer self-assembly, Science 321 (2008) 936.

Block copolymer templating and lithography



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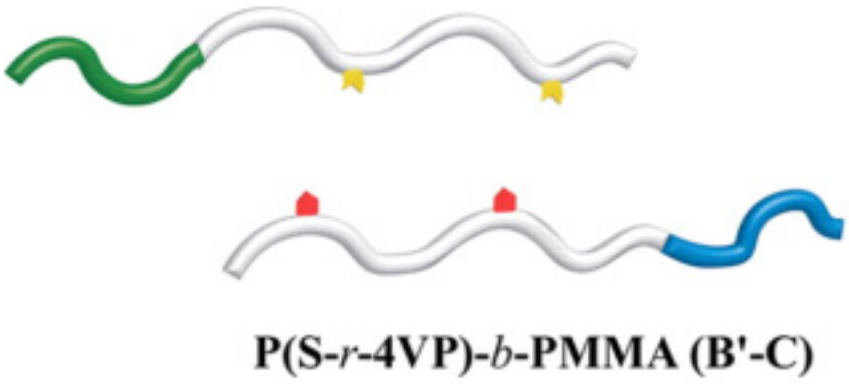
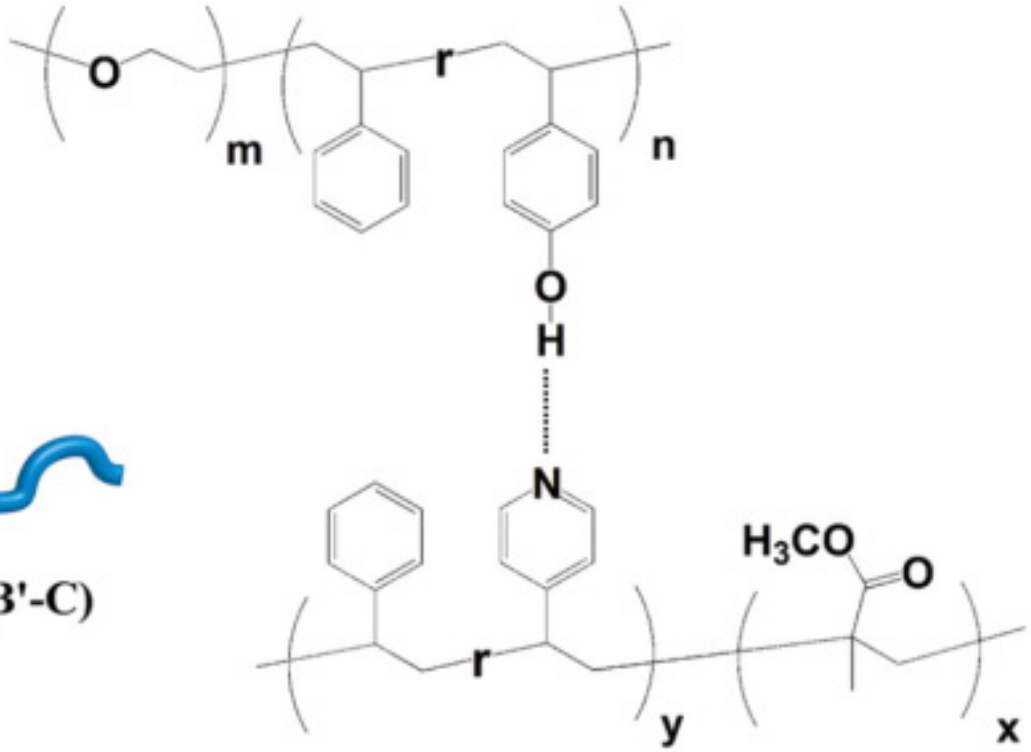
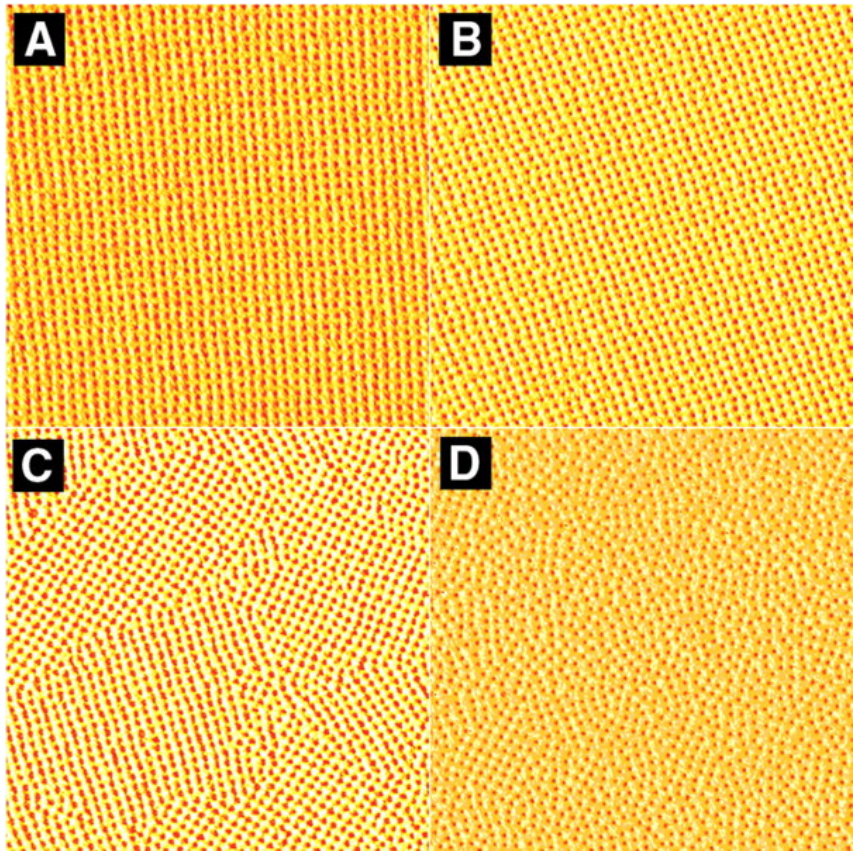
Block copolymer templating and lithography



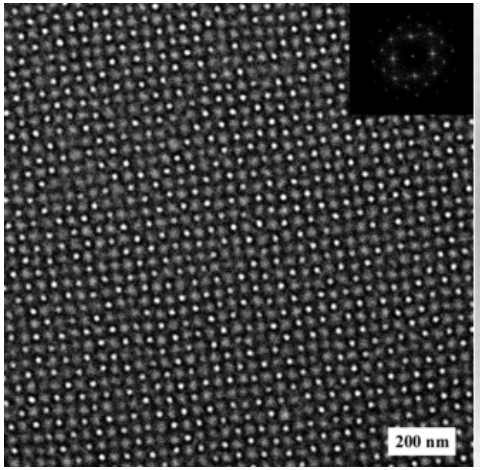


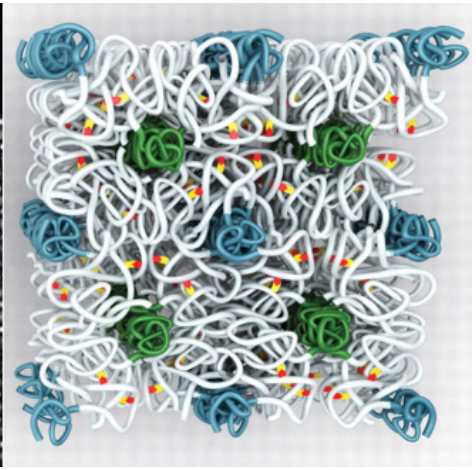
C. Tang, E. M. Lennon, G. H. Fredrickson, E. J. Kramer, C. J. Hawker, Evolution of block copolymer lithography to highly ordered square arrays, Science 322 (2008) 429.

Block copolymer templating and lithography



Various blends of the two block copolymers: 2 μm by 2 μm





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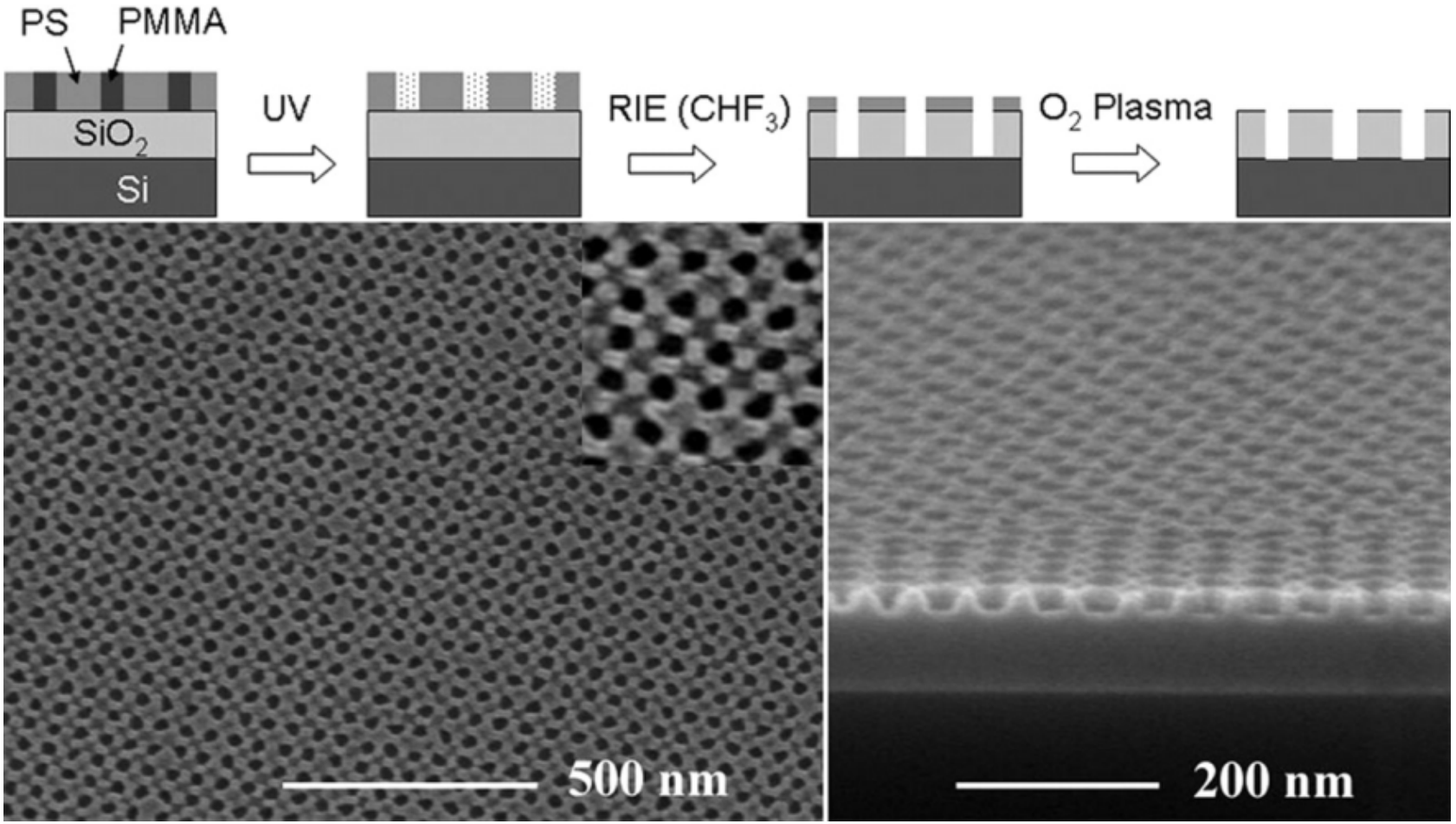

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