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**Fabrication of square arrays of inverted pyramids using ABC triblock terpolymer** HONG KYOON CHOI, CAROLINE ROSS, HANG YU, CARL THOMPSON, Department of Materials Science and Engineering, MIT — Nanolithography using Self-assembly of block copolymer thin film is promising technique to fabricate a wide range of useful devices. Previously, we have reported that we could achieve square array which is one of most important device geometry by using Polyisoprene-b-polystyrene-b-polyferrocenylsilane triblock terpolymer. In this presentation, self-assembled PI-b-PS-b-PFS triblock terpolymer thin film was used as an etching mask to fabricate array of silicon inverted pyramids. Solvent annealed thin film PI-b-PS-b-PFS triblock terpolymer forms a square array of PFS and PI alternation cylinders in a PS matrix with a period of 44 nm. When this square arrayed polymer film immersed into hexane, a good solvent for PI and poor solvent for PS and PFS, an ordered square array of holes was produced by PI phase coming out from its cylindrical post and covering the surface. By using this hole patterned polymer film as an etching mask, KOH anisotropic silicon etching produce square array of inverted pyramids of period 44nm etched into silicon substrate. These square arrays of inverted pyramids are used to template the dewetting of metal film to form metal nanoparticle arrays. Produced ordered metal nanoparticles can be used as magnetic memory arrays and also useful as catalysts for nanowires/nanotube growth.

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