Abstract Submitted
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High area density etching mask for data storage industry based on the block copolymer self-assembly[1] XIAODAN GU, THOMAS RUSSELL, University of Massachusetts Amherst, BIN ZHANG, DORSEY PAUL, Western Digital Inc., UNIVERSITY OF MASSACHUSETTS TEAM, WESTERN DIGITAL INC. TEAM — The application of block copolymer as etching mask for data storage industry was investigated. Higher area density silicon oxide pillars from block copolymer template were generated on the media substrate over several inch square areas. Thin film of PS-b-PVP was spin coated and solvent annealed to generate cylindrical micro-domain normal to surface. The film was then reconstructed in the ethanol alcohol to generate the porous cylindrical micro-domain. Polydimethylsiloxane (*PDMS*) was then spin coated onto the porous film surface. The film was heated to facilitate the movement of PDMS into the pores, and then etched with fluorine and oxygen plasmas to remove the polymeric material, leaving only silicon oxide pillars. The effect of pore diameter on the size and quality of silicon oxide pillar was investigated. Larger pores generated higher quality pillars. Areal densities from 0.5 to 2 Teradots per inch square were achieved. The silicon oxide produced had a good ion-etch resistance, enabling pattern transfer the pillar pattern to underlying magnetic media.

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