

Abstract Submitted
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Synthesis and graphoepitaxial placement control of block copolymer mediated silver nanoparticles DONG WOOK KIM, NOEL ARELLANO, CHARLES RETTNER, LESLIE KRUPP, TEYA TOPURIA, PHILIP RICE, GABRIELE RAINO, THILO STOFERLE, RAINER MAHRT, HO-CHEOL KIM, KRICT TEAM, IBM ZURICH RESEARCH CENTER TEAM — The strong interactions of plasmons in metal nanoparticle assemblies can render many possible applications ranging from sensors to imaging and information technology. To realize such applications, synthesis of well defined metal nanoparticles and precise control over assembly are critical. In this paper, we report a synthetic scheme of silver nanoparticles and their combination with dielectrics and/or gain media and their assembly on substrates. Silver nanoparticles are synthesized using a block copolymer of polystyrene and poly(4-vinyl pyridine) (PS-b-P4VP). Well defined nanoparticles were assembled on substrates using a graphoepitaxial approach with topographic patterns prepared by E-beam lithography. The effect of shapes and scales of topographic patterns on the nanoparticle assembly was investigated. Careful optical characterization and potential applications will be discussed.

Ho-Cheol Kim

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