Enhanced Mechanics with Micro-contact Printing for One Micron Deposition of Metallic Patterns

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ABSTRACT

In micro – contact printing, the mechanics of the microstructure on an elastomeric stamp are crucial for obtaining a printed image with high feature resolution and repeatability. In this talk, we are going to report new consideraiton of introducing surface engineering for surface crosslinking of elastomeric microstructure. Thourgh selective surface stiffness enhancement, printing stamp owns a higher printing stability during contact. The significant enhancement of modulus of elastomeric base after the surface crosslinking is confirmed by numerical simulation, atomic force microscopy (AFM) based metrology, and experimental results. Particularly, the AFM metrology will be extensively discussed on how to prompt different modes to satisfy the practicing requirements as well as some comments on AFM modes will be given for dedicating their applications as nanometrologic means for obtaining more structural properties at micro/nano scale. Experimental results, including a post – process step by copper electroless plating, will show our latest sucess on fabrication one micro size metallic patterns at ease.