

Abstract Submitted  
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**Spin-on**

**Di-block**

**Copolymer Films for Covalent DNA Attachment**<sup>1</sup> HERNAN RENGIFO, CRISTIAN GRIGORAS, JINGYUE JU, JEFFREY KOBERSTEIN, Columbia University — We demonstrate that alkyne end-functional block copolymers can be used to immobilize fluorescently labeled dyes, RNA or DNA onto glass substrates by 1,3-dipolar cycloaddition reactions or so-called “click chemistry”. Spin cast films of  $\omega$ -alkyne-terminated poly(methylmethacrylate-*b*-tert butyl acrylate) spontaneously form bilayer structures with thicknesses ranging from 5 to 30nm on silicon wafers or glass. The areal density of functional groups is controlled by adjusting the thickness of the monolayer through spin coating speed or solution concentration. The charge at the surface can be also controlled by de-protection of the *tert*-butyl ester groups by exposure to UV radiation in the presence of photoacid generator to form carboxylic acid groups. The surface is characterized by contact angle, ellipsometry, fluorescent imaging and angle-dependent X-ray photoelectron spectroscopy (ADXPS). The technique is used to create DNA microarrays and the performance of these arrays is evaluated for DNA hybridization and DNA Sequencing by Synthesis.

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