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Molecular Imprinting of Silica Nanoparticle Surfaces via Reversible Addition-Fragmentation Polymerization for Optical Biosensing Applications[1] ZEHRA OLUZ, TOBB UET Materials Science and Nanotechnology Engineering, SANA NAYAB, Lahore College for Women University Department of Chemistry, TALYA TUGANA KURSUN, TUNCER CAYKARA, Gazi University Department of Chemistry, BASIT YAMEEN, Harvard Medical School Laboratory of Nanomedicine and Biomaterials, HATICE DURAN, TOBB UET Materials Science and Nanotechnology Engineering — Azo initiator modified surface of silica nanoparticles were coated via reversible addition-fragmentation polymerization (RAFT) of methacrylic acid and ethylene glycol dimethacrylate using 2-phenylprop 2-yl dithobenzoate as chain transfer agent. Using L-phenylalanine anilide as template during polymerization led molecularly imprinted nanoparticles. RAFT polymerization offers an efficient control of grafting process, while molecularly imprinted polymers shows enhanced capacity as sensor. L-phenylalanine anilide imprinted silica particles were characterized by X-Ray photoelectron spectroscopy (XPS), atomic force microscopy (AFM). Performances of the particles were followed by surface plasmon resonance spectroscopy (SPR) after coating the final product on gold deposited glass substrate against four different analogous of analyte molecules: D-henylalanine anilide, L-tyrosine, L-tryptophan and L-phenylalanine. Characterizations indicated that silica particles coated with polymer layer do contain binding sites for L-phenylalanine anilide, and are highly selective for the molecule of interest.

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