Abstract Submitted
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Immobilization of polymer microgels containing metal nanocatalysts onto inorganic surfaces[1] L. PAPOUTSAKIS, M.A. FRYSALI, M. KALIVA, M. VAMVAKAKI, S.H. ANASTASIADIS, Foundation for Research and Technology-Hellas and Univ. of Crete, Greece — This study is concerned with the attachment of electrostatically and sterically stabilized polymer microgel particles containing either amino (poly(2-(diethylamino)ethyl methacrylate), PDEA) or carboxylic acid (poly(acrylic acid), PAA; poly(methacrylic acid), PMMA) functional groups onto inorganic surfaces. The microgels are prepared by emulsion radical polymerization and are utilized as nanoreactors for the synthesis of metal nanoparticles to be used as nanocatalysts; Pd and Ru nanoparticles have been synthesized. The attachment of the microgel particles onto the various surfaces, which can potentially be used as the walls of microfluidic reactors, is studied; glass, silicon and alumina were used as substrates. We investigated the effects of parameters such as concentration of the suspension, substrate orientation whereas we utilized various recipes for "trapping" the microgel particles within interfaces to achieve their deposition onto the inorganic surfaces. The durability of the microgel particles attached onto the surfaces against hydration and shear forces was tested utilizing repeated immersion of the surfaces into water undergoing mechanically-generated hydrodynamic flow.

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