Synthesis and some properties of polymer brushes covered robust raspberry-like particles

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We suggest the synthetic approach for preparation chemically and mechanically robust raspberry-like particles. The raspberry-like particles were prepared by immobilization of amino covered silica nanoparticles on the surface of silica microparticles coated by poly(glycidyl methacrylate) (PGMA) brush layer. The raspberry-like particles retain their structure after ultrasonication and exposure to organic solvents that allows their use as substrates for immobilization on polymer chains [1].

SEM image of raspberry-like particles after the synthesis

Wetting properties of the coatings based on them were investigated.

Values of advancing and receding water contact angles on flat polyfluorostyrene (PFS) covered flat surface (PFS flat) and layers formed on different particles: SP1000-PFS – 1 µm large silica particles covered PFS; PR-NH2 – amino covered raspberry-like particles; RP-Br - raspberry-like particles with immobilized 2-bromo-2-methylpropionyl bromide; RP- PFS – PFS covered raspberry-like particles

Also was shown that raspberry-like particles with immobilized polypentafluorostyrene could form ultrahydrophobic surfaces.