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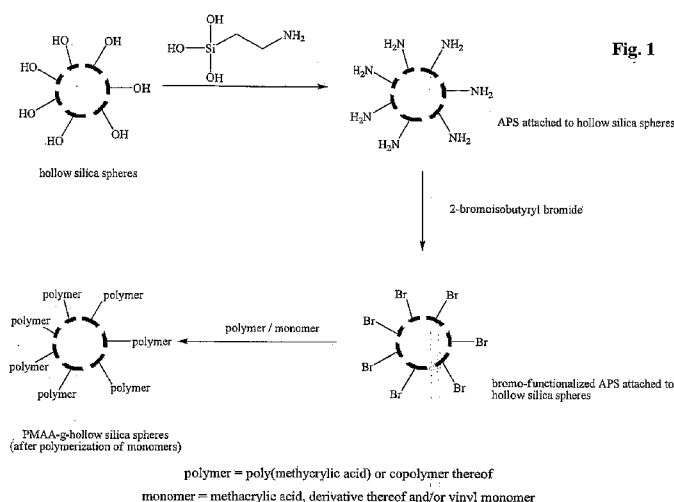
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(54) Title: SMART POLYMERS FUNCTIONALIZED HOLLOW SILICA VESICLES



(57) **Abstract:** The present invention provides a porous hollow silica micro- or nanoparticle with a polymer grafted thereon, wherein the polymer is selected from poly(methacrylic acid) and copolymers thereof. The polymer may be covalently linked to the silica particle via a bridging group. Provided is also a method of covalently coupling a poly(methacrylic acid) to a silica surface of a hollow silica particle. The method comprises contacting a silica surface of a hollow silica particle that carries amino functional or halogen functional groups with a poly(methacrylic acid) or a copolymer or a respective monomer thereof. The method further comprises allowing the carboxyl group of the monomer or the poly(methacrylic acid) and an amino functional group or a halogen functional group on the silica surface to undergo a coupling reaction, thereby covalently coupling the polymer to the silica surface.