

Fabrication of Highly Porous Microspheres of Poly(methyl methacrylate) and TiO<sub>2</sub> by Electro-spraying

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Highly porous PMMA microspheres impregnated by TiO<sub>2</sub> nanoparticles were fabricated by electro-spraying process. The size and the morphology of the micro-structure was well-controlled by varying the PMMA concentration, co-solvent ratio, PMMA/TiO<sub>2</sub> ratio and the relative humidity. SEM images showed that the resulting microspheres exhibited highly-porous structure and spherical morphology with an average size of 3.03 ± 0.94 μm. Energy dispersive X-ray mapping confirmed that the TiO<sub>2</sub> nanopowders were homogeneously distributed throughout the composited microspheres. The water repellency of the porous particles was determined by measuring the contact angle and the oil absorption with respect to the porosity was also tested using triglyceride oil. This study clearly indicates that the well-defined architecture and the controllable porosity of the PMMA/TiO<sub>2</sub> microspheres could be potentially advantageous in the applications to catalyst, sensor and cosmetics.