Abstract Submitted
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Fabrication of nanoporous TiO2 filters using organic–inorganic nanocomposites[1] MEHMET BURAK KAYNAR, SNTG Lab. Physics Engineerin Dept. Hacettepe Uni. Turkey, RYAN DELPERCIO, EMRE YASSITEPE, Department of Materials Science and Engineering, University of Delaware, Newark, DE 19716, United States, SADAN OZCAN, SNTG Lab. Physics Engineerin Dept. Hacettepe Uni. Turkey, S. ISMAT SHAH, Department of Materials Science and Engineering, University of Delaware, Newark, DE 19716, United States — Nanoporous TiO2 filters with 50 nm mean pore size is synthesized by using commercial TiO2 nanoparticles and polyvinylpyrrolidone with an easy and low cost route that did not involve any solvent. Crystal's structure and surface morphologies are studied by X-ray diffraction (XRD) and scanning electron microscopy (SEM), respectively. X-ray photoelectron microscopy (XPS) is used to confirm the filtering process by analyzing pre- and post-filter affluent containing nanoparticles to simulate the filtration of micrometer (bacteria) and nanometer (virus) species. Greater than 85% filtering efficiency is obtained during the filtering of a mixture of water and 30 nm mean crystallite size of iron oxide nanoparticles.

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