Fabrication of porous TiO2 nanofibers by microemulsion electrospinning techniques for photocatalytic reaction and dye-sensitized solar cells

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In this work, porous TiO2 nanofibers with hierarchical inner structure were fabricated by microemulsion electrospinning techniques. The porous TiO2 nanofibers were fabricated by an electrospinning technique using poly(methyl methacrylate), titanium isopropoxide, paraffin oil and hexadecyl trimethyl ammonium bromide(CTAB). The samples were characterized using thermogravimetric analysis, field-emission scanning electron microscopy, and X-ray diffraction. The photocatalysts were evaluated using the photodecomposition of methylene blue under UV light. The special porous structure supplies a good chance for promoting the performance of materials, which may find applications in catalysis, sensors, absorption, separation, and dye sensitized solar cells.