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Analysis of TiO2 nanocomposite using x-ray spectrometry

Nanostructures of Titanium oxide are being studied for many promising applications due to their excellent photo-catalytic properties [1]. We have synthesized low-dimensional TiO2 nanoparticles by laser pyrolysis technique. The synthesis process has been optimized for the deposition of highly pure and nearly monodispersed TiO2 nanoparticles on silicon substrates [2]. The surface morphology of the TiO2 nanostructure has been investigated using combined x-ray reflectivity and grazing incidence x-ray fluorescence measurements [3]. Transmission electron microscopy and grazing incidence x-ray diffraction measurements were also carried out for the deposited TiO2 nanostructures to evaluate surface coverage and crystalline structure of the particles. The average particle size of TiO2 nanostructure estimated using transmission electron microscopy was found to closely agree with the x-ray standing wave analysis. The combined x-ray spectrometry and Transmission electron microscopy profiles are shown in Fig. 1(a) and Fig. 1(b) respectively.

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