

Formation and particle growth of TiO_2 in silica xerogel glass ceramic during a sintering process

H Aripin, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=9999920530843&lokasi=lokal>

Abstrak

This investigation presents the synthesis procedure and the results of an investigation of the crystallite growth of TiO_2 and the formation of Si–O–Ti bonds in novel silica xerogel (SiO_2) glass ceramic produced from an amorphous SX derived from sago waste ash. The composition had been prepared by adding various amounts of TiO_2 , from 20 wt% to 80 wt%, into the amorphous SiO_2 , and then a series of samples were sintered at 1200°C for 2 hours. The influence of the content of TiO_2 and the sintering temperature on the properties of TiO_2 , namely crystallite size and formation of Si–O–Ti bonds, has been studied in detail. The properties of the produced ceramics have been characterized on the basis of the experimental data obtained using X-ray diffraction (XRD) and Fourier transform infrared (FTIR) spectroscopy. It has been found that an addition of SiO_2 confers an appreciable effect on the quantity of Si–O–Ti bonds. The interpretation of the XRD pattern allows one to explain the increase in the crystallite size of rutile TiO_2 by a decreased quantity of Si–O–Ti bonds.