

Synthesis of SiC from rice husk by using magnesiothermic reduction

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Rice husk, the outer cover of rice, is a by-product originated from threshing process of rice milling industry. Rice husk, about 20% by weight of rice, is composed of amorphous silica and carbon (lignin, cellulose, hemicelluloses). It has been extensively investigated as silicon based materials such as silicon carbide, silica, silicon nitride, silicon and zeolite. Silicon carbide (SiC) is one of useful functional silicon based materials because of excellent mechanical properties, high chemical and thermal stabilities, biocompatibility and wide bandgap (2.39 eV for β -SiC). It is well known that SiC is normally synthesized at high temperature (>1400oC) via carbothermic reduction process, which is cost-intensive process. In this work, SiC is synthesized from rice husk via magnesiothermic reduction process. This process is conducted at lower temperature than that of carbothermic reduction process, which reduces energy cost. The structure and morphology of synthesized powder are investigated by X-ray diffraction and scanning electron microscope, respectively. Diffuse reflection spectra is investigated to confirm synthesis of β -SiC.