

Preparation of porous silicon from rice husk

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Recently, social concerns and importance over 'green growth' and 'renewed energy technology' has increased, which result from the increase of cost of fossil fuels and climate change. One of the critical technologies for accomplishing the 'green growth' would be to recycle waste products generated through the manufacturing process of products. Nationally, one of the major wastes is rice husks, generated from the production of rice. The annual rice production amounts in the world are approx. 1 billion metric tons, of which about 20% is rice husk. However, its utilization has been limited to just low-value application in agriculture area such as stockbreeding rug, bed soil and lagging materials because of their tough, woody, abrasive property.

Thus, many researchers endeavor to increase their added value. Especially, many efforts of utilization of rice husk focus on production of silicon-based materials, including SiC, Si₃N₄, SiO₂ and high grade Si, because of the high silicon content in rice husk. In this work, the possibility of preparing high grade silicon (>3N) and porous silicon (pore diameter of 1-100nm) from rice husk were investigated, which applies to high-value application such as silicon solar cell and anode material of lithium-ion battery.