

## Adsorption of Acetone Vapors by SBA-16 and MCM-48 Synthesized from Rice Husk Ash

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**Abstract :** Silica was extracted from agriculture waste rice husk ash (RHA) and was used as the silica source for synthesis of RMCM-48 and RSBA-16. An alkali fusion process was utilized to separate silicate supernatant and the sediment effectively. The CTAB/Si and F127/Si molar ratio was employed to control the structure properties of the obtained RMCM-48 and RSBA-16 materials. The N<sub>2</sub> adsorption-desorption results showed the micro-mesoporous RSBA-16 possessed high specific surface areas (662-1001 m<sup>2</sup>/g). All the obtained RSBA-16 materials were applied as the adsorbents for acetone adsorption. And the breakthrough tests clearly revealed that the RSBA-16(0.004) materials could achieve the highest acetone adsorption capacity of 186 mg/g under 1000 ppmv acetone vapor concentration at 25°C, which was also superior to ZSM-5 (71mg/g) and MCM-41 (157mg/g) under same test conditions. This can help to reduce the solid waste and the high adsorption performance of the obtained materials could consider as potential adsorbents for acetone adsorption.

**Keywords :** acetone, adsorption, micro-mesoporous material, rice husk ash (RHA), RSBA-16

**Conference Title :** ICEST 2015 : International Conference on Environmental Science and Technology

**Conference Location :** Venice, Italy

**Conference Dates :** April 13-14, 2015