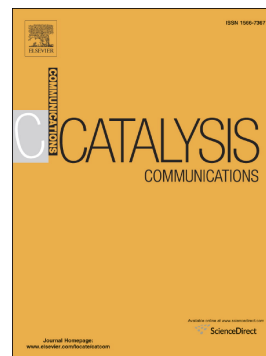


## Accepted Manuscript

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## An inexpensive and environmentally friendly activated marble waste as a catalyst for vapour phase dehydration of 1, 4-butanediol to tetrahydrofuran

Yadagiri Jyothi<sup>a</sup>, Puppala Veera Somaiah<sup>b</sup>, Kannapu Hari Prasad Reddy<sup>\*a,c</sup>, Vakati Venkateshwarlu<sup>a</sup>, Koppadi Kumara Swamy<sup>a</sup>, B. David Raju<sup>\*a</sup> and K. S. Rama Rao<sup>a</sup>

<sup>a</sup>Inorganic and Physical Chemistry Division, CSIR-Indian Institute of Chemical Technology, Hyderabad, India- 500007.

<sup>b</sup>Inorganic chemistry, Osmania University, Hyderabad, India- 500007

<sup>c</sup>Department of Chemical Engineering, Hanyang University, Seoul 133-791, Republic of Korea

### Abstract:

Dehydration ability of activated marble waste consisting of CaO (62.12%), MgO (26.8%), SiO<sub>2</sub> (9.24%) including minor amount of Fe (1.94 %), Na (0.70%), P (0.019 %), K (0.11 %) and Mn (0.13%) was examined in the formation of tetrahydrofuran from biomass derived 1,4-butanediol. An excellent catalytic activity was observed as BDO conversion was 95 % with > 95% yield of tetrahydrofuran at 375 °C. The best reaction conditions were found by studying various reaction parameters such as effect of temperature, flow rate and time on stream study. Activated marble waste was characterized by using XRD, XRF, N<sub>2</sub> physisorption, TG/DTA analysis, CO<sub>2</sub>-TPD, SEM and TEM. The high catalytic activity of AWM was attributed to the presence of high basic nature of the marble waste.

**Key words:** Activated marble waste, bio mass, 1, 4-butanediol, dehydration, tetrahydrofuran, basic sites.

\*Corresponding author: E-mail: [Kannapuhari@gmail.com](mailto:Kannapuhari@gmail.com) (Kannapu H. P. R.), Tel: +02-2220-4329, Fax: +02-2298-4101, david@iict.res.in (B. David Raju), Tel: +91-40-27193163, Fax: +91-40-27160921

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