Hydrogen generation from sodium borohydride over sulfonated montmorillonite catalyst

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Sulfonated montmorillonite was prepared by using two steps, initially montmorillonite K10 (MMT) powder was reacted with hydrochloric acid for exchanging H^+ ions with cations of montmorillonite and obtained H-montmorillonite (HMMT). Finally, HMMT is sulfonated by treating with chlorosulfonic acid to get an acidic heterogeneous sulfonated montmorillonite (SMMT) catalyst. The prepared catalysts were characterized by EDX, XRD, FT-IR, SEM, acidity-determination, and TGA. SMMT was applied to hydrogen generation from sodium borohydride hydrolysis reaction under different reaction parameters. The catalyst exhibited high catalytic activity in terms of H_2 evolution rate and stability. This work was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (Grant number: NRF-2013R1A1A2060638)