

Hydrogen storage and production using liquid organic hydrogen carrier and ammonia

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Liquid organic hydrogen carrier (LOHC) and ammonia can store hydrogen safely by chemical reactions and transport a large amount of hydrogen produced abroad to South Korea. Towards a hydrogen economy, we require the selection of competitive LOHC and the development of hydrogen production technologies such as reactor and purification process. First, we present a thermodynamic assessment of LOHC. We demonstrated that toluene-based compounds are promising LOHC candidates with the combined experimental and theoretical analysis. We also show a preliminary result of hydrogen production from ammonia. Based on the result, we will discuss what other technologies are available to supply low-cost hydrogen to South Korea.