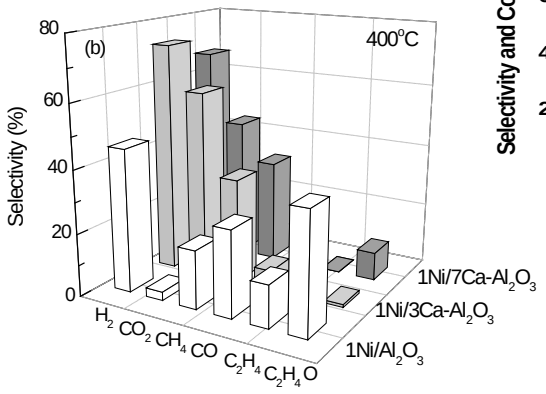
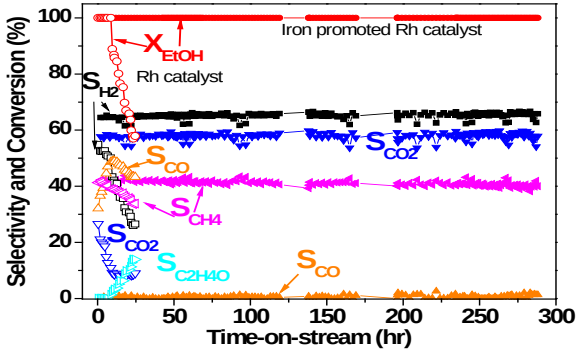
Development of an Efficient and Stable Catalyst to Produce Hydrogen via Ethanol Steam Reforming

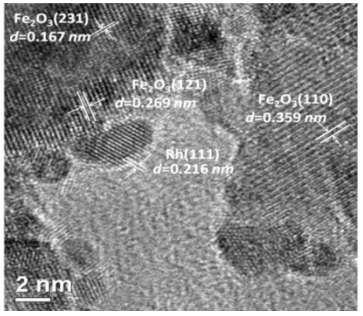
Hydrogen can be used as an industrial feedstock and also as a fuel for fuel cell application. Catalytic ethanol steam reforming (ESR) is a promising route to produce hydrogen since ethanol is non toxic with high hydrogen content and can be produced from renewable biomass. ESR is particularly suitable for small scale on-board or on-site hydrogen production. The development of a highly efficient catalyst which produces high hydrogen yield and has a long catalytic lifespan is critical for industrial production.

$$C_2H_5OH + 3H_2O = 6H_2 + 2CO_2$$

Catalyst development for ESR is carried out in ICES. Effects of catalyst carriers as well active metals such as Ni, Co, Ru, Pt and Rh have been investigated.







For more information, please contact Chen Luwei, email: chen_luwei@ices.a-star.edu.sg.

[1] L. Chen et al., Int. J. Hydrogen Energy, in press.
[2] Catherine K.S. Choong et al., Appl. Catal. A, 407(2011) 145-154.
[3] Catherine K.S. Choong et al., Appl. Catal. A, 407(2011) 155-162.
[4] L. Chen et al., J. Catal. 276 (2010) 197.
[5] Alaric C.W. Koh et al., Int. J. Hydrogen Energy, 34 (2009) 5691.
[6] Alaric C.W. Koh et al., Catal. Comm. 9 (2008) 170.

A*STAR ICES

ICES Celebrates 2002 - 2012