

Pengembangan Katalis untuk Steam Reforming Bio-oil

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Abstrak

This research has the effort to develop catalyst for steam reforming of bio oil. The bio oil is liquid product that is produced from biomass pyrolysis. The reforming of bio oil produces hydrogen gas. The main challenge in reforming of organic compound especially aromatic, in bio oil as phenol, is carbon formation at the catalyst surface resulted in uncomplete reaction. The catalyst formulation resulted is expected to have high resistance to catalyst deactivation because of carbon formation. Beside that, it is expected too to have high stability and activity, compared to commercial nickel based catalyst. For those purposes, research of steam reforming of m-cresol in bench scale has been done. m-cresol is one of phenol compounds in bio oil, that has stable properties, difficult to react and disturb the catalyst activity. The catalyst formulation used is Ru-Ni/MgO.La;O₃.Al₂O₃ mixture. This research has succeed to develop catalyst of reforming from Ni-Ru metal combination that having the good stability and activity to reform m-cresol. The best catalyst composition resulted is 2%Ru-15%Ni. In Ni and Ru catalyst combination, Ni catalyst is the mainly active component in reforming of oxygenated aromatic compound in bio oil The Ru catalyst function is to increase Ni metal dispersion on support, by then increasing the catalyst stability.