The H_2 production from the hexadecane partial oxidation on Rh-loading catalysts

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The diesel engine has a good fuel economy and high durability. However, the emission of NO_x is plenty, resulted in the occurrence of air pollution. So NO_x removal is presently receiving considerable research attention. In recent reviews, the synthesis gas and olefins produced from the diesel fuel partial oxidation devices were directly injected into a de-NO_x catalyst system. Therefore in this study, we have an attempt to produce the synthesis gas by a partial oxidation of hexadecane over Rh catalysts. The partial oxidation efficiency increased with an increase of reaction temperature untill 800℃; The best conversion of hexadecane was obtained at above 700℃ and the best selectivities of CO and H_2 were exhibited at 800℃ on all catalysts. Particularly, partial oxidation of hexadecane was improved in the order of Al_2O_3< Rh/Al_2O_3< Ce-Zr-LaO_x< Rh-Ce-Zr-LaO_x. In addition, The best selectivity of H_2 and CO was showed in Rh-Ce-Zr-LaO_x. From this result, we have confirmed that the Rh component with spillover hydrogen property is effective to obtain H_2 from hexadecane.