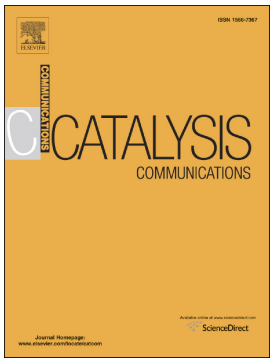

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Structured Ni(Cl)/CeO_2/η-Al_2O_3/FeCrAl wire mesh catalyst for selective CO methanation

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ABSTRACT

A structured Ni(Cl)/CeO_2/η-Al_2O_3/FeCrAl catalyst was developed and tested for the reaction of selective methanation of CO in the presence of CO_2. The use of a FeCrAlloy wire mesh with a η-Al_2O_3 protective coating as a support of Ni(Cl)/CeO_2 enabled production of a catalyst with the ability of high rates of heat removal, that is similar in performance to the most efficient powder catalysts. In a hydrogen-rich gas mixture of composition (vol.%): 1.0 CO, 65 H_2, 10 H_2O, 20 CO_2, He - balance, at WHSV of 29 L g^{-1} h^{-1}, the Ni(Cl)/CeO_2/η-Al_2O_3/FeCrAl catalyst reduced the CO concentration to a level of <10 ppm in the temperature range of 230-270 °C with a selectivity larger than 70%.

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