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研究论文

Effect of Partial Substitution of Ni by Cu in $LaNiO_3$ Perovskite Catalyst for Dry Methane Reforming

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摘要 A series of ternary perovskite type oxides $LaNi_{1-x}Cu_xO_3$ (x = 0.2, 0.4, 0.6, 0.8, and 1.0) were synthesized via the sol-gel method in propionic acid. Partial substitution of Ni by Cu showed higher activities and selectivities towards syngas products. $LaNi_{0.8}Cu_{0.2}O_3$ was the most active toward the CH_4 and CO_2 conversions, and was selective for syngas products. Temperature-programmed reduction results showed that the addition of Cu facilitates the reduction of Ni^{3+} to Ni^0, which is the main reason for the higher performance of this catalyst.

关键词： dry reforming of methane perovskite lanthanun nickel sol-gel method

Abstract： A series of ternary perovskite type oxides $LaNi_{1-x}Cu_xO_3$ (x = 0.2, 0.4, 0.6, 0.8, and 1.0) were synthesized via the sol-gel method in propionic acid. Partial substitution of Ni by Cu showed higher activities and selectivities towards syngas products. $LaNi_{0.8}Cu_{0.2}O_3$ was the most active toward the CH_4 and CO_2 conversions, and was selective for syngas products. Temperature-programmed reduction results showed that the addition of Cu facilitates the reduction of Ni^{3+} to Ni^0, which is the main reason for the higher performance of this catalyst.

Keywords： dry reforming of methane, perovskite, lanthanun, nickel, sol-gel method

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