

## TRABALHO PUBLICADO EM PERIÓDICO

### **Syngas production by partial oxidation of ethanol on PtNi/SiO<sub>2</sub>-CeO<sub>2</sub> catalysts**

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Abstract: Syngas production from the partial oxidation of (bio)ethanol (POE) was demonstrated. For this purpose, Pt or Ni with different metal loading supported on CeSiO<sub>x</sub> were used as catalysts. The catalytic performance was studied in the 600–800 °C temperature range and with oxygen-to-ethanol molar ratios of 0.5 and 0.75. The highest ethanol conversion and H<sub>2</sub> and CO selectivities were achieved at 800 °C. As byproducts, small amounts of CH<sub>4</sub>, C<sub>2</sub>H<sub>4</sub>O, and C<sub>2</sub>H<sub>4</sub> were found, and their selectivity decreased with increasing the reaction temperature. Carbon formation during POE at 800 °C on these catalysts followed the order: 1Pt/CeSiO<sub>x</sub> < 5Ni/CeSiO<sub>x</sub> < 1Pt5Ni/CeSiO<sub>x</sub> < 10Ni/CeSiO<sub>x</sub> < 1Pt10Ni/CeSiO<sub>x</sub>. Therefore, 1Pt5Ni/CeSiO<sub>x</sub> presented the best performance for the POE reaction at 800 °C, with low byproduct formation and carbon deposition, thus evidencing the cooperative effect of the support and the synergic effect between the Pt and Ni particles.