

Carbon dioxide reduction by oxygen absorption on strontium doped lanthanum cobalt perovskite-type oxides

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In 2010, the world estimate carbon dioxide emissions were 30.6 Gt, which constitutes an all time high. From this number, US is responsible for around 5Gt of carbon dioxide emissions. To prevent this continuous increase, new techniques need to be developed. Perovskites materials have been used in the past as electrodes in fuel cells and and conductors. These types of materials with molecular formula ABO_3 have oxygen deficiencies in its structure. In the present work, strontium doped lanthanum cobalt perovskite in different proportions was synthesized to evaluate its properties as carbon dioxide reductor with temperature programmed techniques. In order for the reduction reaction to take place, an unfavorable Gibbs energy must be overcome. Results showed that $La_{1-x}Sr_xCoO_{3-\sigma}$ ($x = 0.25 - 0.5$) were the most active catalysts in the reduction of carbon dioxide. Further studies are currently being performed to improve the carbon dioxide conversion using these materials.