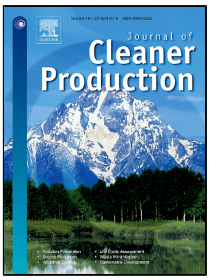
Accepted Manuscript



An Assessment of the Longevity of Samarium Cobalt Trioxide Perovskite Catalyst during the Conversion of Greenhouse Gases into Syngas

Osarieme Uyi Osazuwa, Maksudur R. Khan, Su Shiung Lam, Suttichai Assabumrungrat, Chin Kui Cheng

PII:	S0959-6526(18)30717-0
DOI:	10.1016/j.jclepro.2018.03.060
Reference:	JCLP 12318
To appear in:	*Journal of Cleaner Production*
Received Date:	30 October 2017
Revised Date:	25 January 2018
Accepted Date:	06 March 2018

Please cite this article as: Osarieme Uyi Osazuwa, Maksudur R. Khan, Su Shiung Lam, Suttichai Assabumrungrat, Chin Kui Cheng, An Assessment of the Longevity of Samarium Cobalt Trioxide Perovskite Catalyst during the Conversion of Greenhouse Gases into Syngas, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.03.060

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT WORDS COUNT = 4600

An Assessment of the Longevity of Samarium Cobalt Trioxide Perovskite Catalyst during the Conversion of Greenhouse Gases into Syngas

Osarieme Uyi Osazuwa[1, 2, 3], Maksudur R. Khan[1,2], Su Shiung Lam[4], Suttichai Assabumrungrat[5], Chin Kui Cheng[1, 2]*

[1] Centre of Excellence for Advanced Research in Fluid Flow,

Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang Kuantan, Pahang, Malaysia

[2] Faculty of Chemical & Natural Resources Engineering,

Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang Kuantan, Pahang, Malaysia

[3] Department of Chemical Engineering,

University of Benin, PMB 1154, Benin City, Edo State, Nigeria

[4] Eastern Corridor Renewable Energy Group (ECRE), School of Ocean Engineering, University Malaysia Terengganu, 21030 Kuala Terengganu, Malaysia

[5] Center of Excellence in Catalysis and Catalytic Reaction Engineering, Department of Chemical Engineering, Faculty of Engineering, Chulalongkorn University, Bangkok 10330, Thailand

*Corresponding Author. Tel: +6-09 549 2896

E-mail: chinkui@ump.edu.my

Abstract

Catalytic carbon dioxide (CO_2) reforming of methane (CH_4) has gained interest because it reduces the amount of greenhouse gases in the environment. In addition, the products from the reforming process are utilized as feedstock in the Fischer-Tropsch synthesis. However, rapid catalyst deactivation and sintering due to carbon deposition often accompany the CO_2 reforming of CH_4 reaction. In this study, samarium cobalt trioxides perovskite catalyst was synthesized and employed as catalyst in a 72 h longevity test conducted at 1073 K using CO_2 to reform CH_4 with gas-hourly-space velocity of 30,000 h^{-1}. Feed ratios (0.5 – 2.0) were varied and excellent catalytic longevity, maximum conversion (above 90 %) and yield (above 60%), were obtained at 1.0 feed ratio. Physicochemical properties of the fresh catalyst revealed uniform metallic particles distribution on a single phase perovskite structure, while spent catalyst showed evidence of carbon which was graphitic at 0.5 –

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
✓ امکان دانلود نسخه ترجمه شده مقالات
✓ پذیرش سفارش ترجمه تخصصی
✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
✓ دانلود فوری مقاله پس از پرداخت آنلاین
✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات