

论文

多孔莫来石纤维陶瓷负载 $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ ($x = 0.2\sim 0.8$) 的NO+CO催化研究

段碧林, 曾令可, 李秀艳, 刘平安, 税安泽, 刘艳春

华南理工大学材料科学与工程学院, 广州 510640

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摘要

采用真空浸渍法制备了多孔莫来石纤维陶瓷负载 $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ ($x=0.2, 0.4, 0.6, 0.8$) 钙钛矿型催化剂. 利用XRD、SEM、BET等对样品进行了表征. 通过XRD发现, 所制备的 $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ 催化剂除了存在典型的钙钛矿结构外, 图谱中还发现了 $\text{La}(\text{OH})_3$ 峰, 而且随着 x 值的减小 $\text{La}(\text{OH})_3$ 的衍射峰越来越尖锐. 由SEM可以观察到载体具有立体网状结构并且负载在载体上的催化剂颗粒分散性较好. BET表明随着 x 增加, 比表面积相应增加. 利用一氧化氮(NO)和一氧化碳(CO)对所制备的 $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ 系列载体催化剂的催化活性进行了测试比较, 发现当Sr取代量为 $x=0.2$ 时, $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ 整体催化活性较好.

关键词 [La_{1-x}Sr_xCoO₃钙钛矿催化剂](#) [莫来石纤维多孔陶瓷](#) [载体](#) [催化活性](#)

分类号

Catalytic Activity of $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ ($x = 0.2\sim 0.8$) Supported on Porous Mullite Fiber Ceramics for NO and CO

DUAN Bi-Lin, ZENG Ling-Ke, LI Xiu-Yan, LIU Ping-An, SHUI An-Ze, LIU Yan-Chun

Department of Materials Science and Engineering, South China University of Technology, Guangzhou 510640, China

Abstract

Perovskite $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ ($x=0.2,0.4,0.6,0.8$) catalysts based on porous mullite fiber ceramic were prepared by a vacuum impregnation method. The samples were characterized by XRD, SEM and BET, respectively. The $\text{La}(\text{OH})_3$ crystal phase was detected besides the perovskite structures in $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ catalysts, and the $\text{La}(\text{OH})_3$ peaks become sharp as x decreases. Tridimensional netshape of support and the good dispersing particles of catalysts based on support were detected by SEM. Specific surface area of $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ increases with the degree of substitution x of Sr for La via BET tests. Catalytic activity of $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ catalysts prepared for CO+NO was tested. The results indicate that $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ catalysts have a best catalytic activity, when partial substitution of Sr for La reaches the optimal substitution fraction ($x=0.2$).

Key words [La_{1-x}Sr_xCoO₃ perovskite catalyst](#) [porous mullite fiber ceramics](#) [support](#) [catalytic activity](#)

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通讯作者 曾令可 sorrylinbiduan@163.com

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