

## SO<sub>2</sub>对La<sub>0.65</sub>X<sub>0.35</sub>FeO<sub>3</sub>钙钛矿催化剂协同催化氧化NO和甲苯的影响

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### 文章亮点

- 不同金属元素(Ce, Co, Cu, Mn)A位掺杂改性LaFe系钙钛矿型催化剂,会引起晶体结构畸变而产生更多氧空位,提供更多的活性位点,从而显著地提高了催化剂的活性。
- SO<sub>2</sub>容易与催化剂的金属位点发生反应而生成表面硫酸盐沉积物,导致活性位点失效并堵塞孔道结构,从而抑制了NO和甲苯的氧化反应。

### 文章简介

传统方法制得的LaFe系钙钛矿型催化剂的比表面积较低,会影响其表面活性中心的数量和活性强度,导致其表现活性不理想,限制了其实际应用。因此,应有效增加LaFe系钙钛矿复合氧化物的比表面积和晶格缺陷,以便于钙钛矿型催化剂发挥更好的催化活性及抗硫性能。基于此,本研究采用KIT-6硬模板辅助溶胶凝胶法制备由铈(Ce)、钴(Co)、铜(Cu)、锰(Mn) 4种不同金属元素A位掺杂改性的镧铁系钙钛矿,考察在有无SO<sub>2</sub>条件下La<sub>0.65</sub>X<sub>0.35</sub>FeO<sub>3</sub>(X=Cu, Ce, Co, Mn)钙钛矿催化剂协同催化氧化NO和甲苯性能,以揭示SO<sub>2</sub>对La<sub>0.65</sub>X<sub>0.35</sub>FeO<sub>3</sub>(X=Cu, Ce, Co, Mn)钙钛矿催化剂协同催化氧化NO和甲苯的影响机制,并提出了La<sub>0.65</sub>X<sub>0.35</sub>FeO<sub>3</sub>钙钛矿的物化性质与催化性能之间的构效关系,探讨不同金属间协同效应对SO<sub>2</sub>存在条件下催化剂催化性能的影响。本研究可为SO<sub>2</sub>存在条件下协同控制NO<sub>x</sub>和VOCs污染提供参考。

### 作者简介



赵令葵,广西柳州人,湖南大学环境科学与工程专业博士,现任湘潭大学副教授、研究生导师,主要研究方向为大气多污染物协同控制、环境催化材料的制备与应用。多年来致力于大气污染控制的教学和科研工作,在大气质量保障、工业烟气多污染物协同控制及大气污染源头控制等方面积累了较丰富的理论知识和实践经验。已主持国家自然科学基金、湖南省重点研发计划子课题项目、湖南省自然科学基金,以及中国博士后科学基金面上资助项目等多项国家级、省部级项目。在Applied Catalysis B-Environmental, Chemical Engineering Journal, Fuel, Catalysis Science & Technology, Applied Surface Science等国内外知名学术期刊发表论文20余篇。主讲《大气污染控制工程》、《催化剂制备与表征》和《工程设计》等课程。

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