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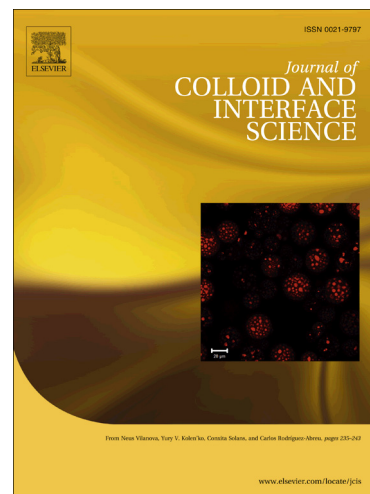
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# **Cu<sub>3</sub>(BTC)<sub>2</sub> catalyzed dehydrogenative coupling of dimethylphenylsilane with phenol and homocoupling of dimethylphenylsilane to disiloxane**

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## **Abstract**

Cu<sub>3</sub>(BTC)<sub>2</sub> (BTC: 1,3,5-benzenetricarboxylic acid) showed to be an efficient and reusable heterogeneous solid acid catalyst for the formation of Si-O bond through dehydrogenative coupling of dimethylphenylsilane (**1**) with phenol under mild reaction conditions. It is observed that Fe(BTC), MIL-101(Cr) and UiO-66(Zr) are not able to promote this cross coupling between **1** and phenol. Cu<sub>3</sub>(BTC)<sub>2</sub> exhibits higher stability and activity compared to other MOFs studied here. Furthermore, Cu<sub>3</sub>(BTC)<sub>2</sub> is reused for three consecutive cycles with a slight decay in its activity. Comparison of the powder XRD patterns of the fresh with three times used Cu<sub>3</sub>(BTC)<sub>2</sub> showed no significant difference in the crystalline structure thus, indicating the catalyst stability under the optimized reaction conditions. Furthermore, EPR, FT-IR and SEM images of the fresh and reused Cu<sub>3</sub>(BTC)<sub>2</sub> did not show any change in the oxidation state of copper or structural morphology. Also, no leaching of copper is noticed for this catalytic reaction. In addition, Cu<sub>3</sub>(BTC)<sub>2</sub> showed higher activity compared to Pt, Pd, Au and Cu supported on active carbon as heterogeneous catalysts in the synthesis of disiloxane from **1** through Si-H activation.

**Keywords:** Cu<sub>3</sub>(BTC)<sub>2</sub>; Silanes; Heterogeneous Catalysis; Si-O coupling; Green Chemistry

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