

金属酞菁催化脱羧合成 3,4-二烷氧基噻吩的简便方法

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摘要 以金属酞菁为催化剂, 2,5-二羧酸-3,4-二烷氧基噻吩在水相中脱羧, 以较高的产率和纯度制得 3,4-二烷氧基噻吩, 避免了有机极性溶剂的使用, 催化剂重复使用 8 次仍表现出优异的催化性能. 另外, 通过简易的水蒸气蒸馏法即可分离出产物. 该法具有环境友好、操作简易和反应时间短等优点, 是一种制备 3,4-二烷氧基噻吩的绿色方法.

关键词: 脱羧 3,4-二烷氧基噻吩 酞菁 合成 绿色化学

Abstract: 3,4-Dialkoxythiophenes are electron rich and their polymers have a narrow energy gap, so they have recently attracted considerable attention in the field of organic semiconducting materials. However, the traditional synthetic approach suffers from some drawbacks, so the development of efficient methods for the synthesis of 3,4-dialkoxythiophenes is needed. A novel, efficient decarboxylation of 2,5-dicarboxy-3,4-dialkoxythiophenes was achieved in excellent yields (up to 95%) and purities using metal phthalocyanines in water, which avoids the use of organic polar solvents, and the recovered catalyst was successfully used in subsequent reactions.

Furthermore, the desired products, 3,4-dialkoxythiophenes, were conveniently separated by steam distillation.

This method has several advantages such as environmental friendliness, ease of manipulation, and a short reaction time. This environmentally friendly procedure represents a promising green route for the decarboxylation of these important compounds.

Keywords: decarboxylation, 3,4-dialkoxythiophene, phthalocyanine, synthesis, green chemistry

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