

عنوان مقاله:

Eco-friendly process for the synthesis of spiro-4H-pyran derivatives using Al₂O₃ as an efficient catalyst

محل انتشار:

پنجمین کنفرانس بین المللی مهندسی محیط زیست و منابع طبیعی (سال: 1398)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

An efficient and readily aluminium oxide (Al₂O₃) for the synthesis spiro-4H-pyran derivatives has been accomplished via one-pot condensation of isatin, malononitrile and different reagents including 1, 3-dicarbonyl compounds, naphthol and 4-hydroxycumarin. The notable advantages of the present procedure are: operational simplicity, solvent-free conditions, environmentally benign nature, low-cost and non-toxic catalyst, short reaction times and good yields.

کلمات کلیدی:

Aluminium oxide (Al₂O₃); Spiro-4H-pyran derivatives; Operational simplicity; Environmentally benign nature conditions.

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