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## Ce(SO<sub>4</sub>)<sub>2</sub>·4H<sub>2</sub>O promotes the synthesis of carbazole derivatives through Michael addition and Diels-Alder reactions

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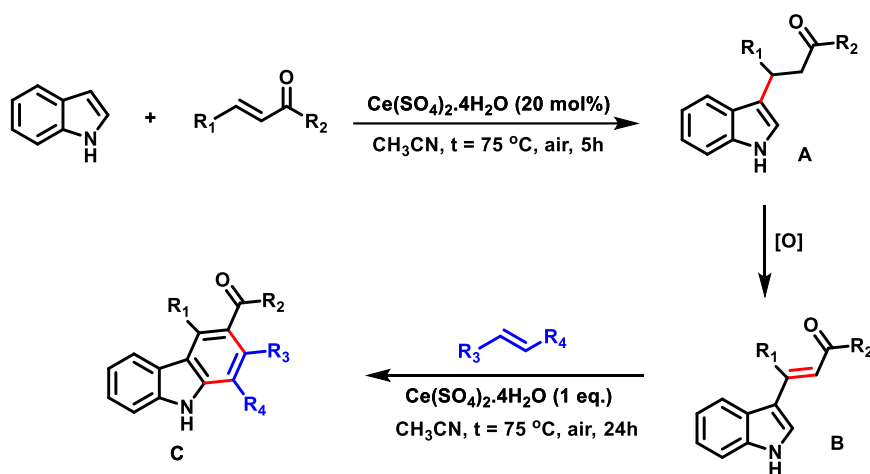
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### ABSTRACT

Michael's addition reaction (MAR) is a versatile method to access numerous building blocks in organic synthesis such as the access to 3 substituted indole obtained from indole and  $\alpha,\beta$ -unsaturated carbonyls<sup>1-3</sup>. Because of their biological relevance<sup>4</sup>, it is still a rewarding task to search for new catalytic conditions to produce these alkaloids. We hereby report the synthesis carbazole alkaloids promotes by Ce(SO<sub>4</sub>)<sub>2</sub>·4H<sub>2</sub>O (**CAT1**) through Michael addition of indole to  $\alpha,\beta$ -unsaturated ketones (chalcones) and the Diels-Alder reaction (DAR) (**Scheme 1**). Different catalysts were used among them **CAT1** turned out to be the best that enabled the preparation of 12 examples of A with yields up to 97% while 8 examples of C were produced with yields up to 30% in optimized conditions.

**Scheme 1.** Synthesis of Michael addition and the Diels-Alder reaction



### ACKNOWLEDGEMENTS

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