ORGANO PHOTOINDUCED DECARBOXYLATIVE ALKYLATION OF COUMARINS WITH N-(ACYLOXY)PHTHALIMIDE

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Visible light catalyzed selective construction of carbon-carbon bond has started to garner attention from chemists recently.[1] Coumarins are naturally occurring compounds recognized in organic materials for optical property and in many pharmaceuticals for impeccable bio-activities.[2] The alkylation of coumarins yielding chain alkylated derivatives and other highly functionalized scaffold installation through alkylation *via* oxidative coupling reaction is still an arduous task. A metal/oxidant free and mild, photo-induced decarboxylative 4-position alkylation of coumarins has been disclosed. Photo-induced single electron transfer has been initiated by utilizing the visible-light absorptivity of Eosin Y[3] for a reductive generation of alkyl radicals from N-(acyloxy)phthalimide esters.[4] Depending on the nature of N-(acyloxy)phthalimide esters (primary, secondary, and tertiary carboxylic acid derived) several saturated and unsaturated C-4 alkylated coumarins were synthesized with excellent yield. Control experiments photophysical and electrochemical studies supported a radical based mechanism for the selective alkylation.

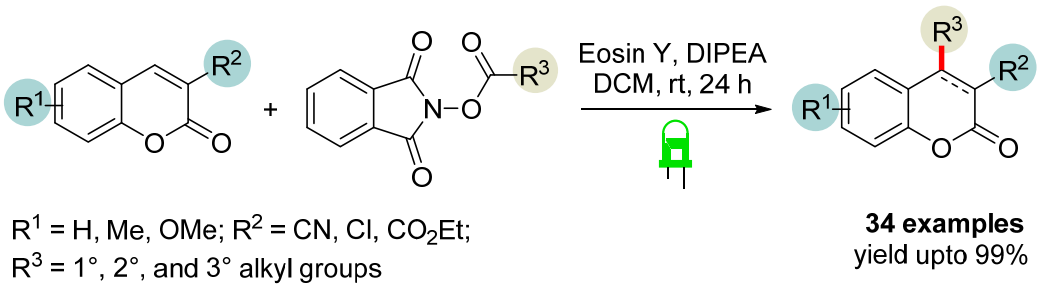

Fig. Visible-light mediated decarboxylative 4-position alkylation of coumarins with various 1˚, 2˚ and 3˚ carboxylic acid derived NHPI esters.

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