

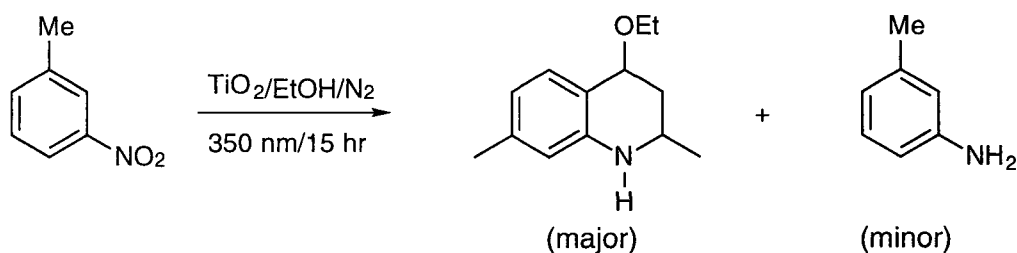
PHOTOCATALYTIC HETEROCYCLE SYNTHESIS FROM A NITROARENE AND ALCOHOL BY TiO₂

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Most of the reaction product obtained from the TiO₂ mediated photocatalysis result in photodegradation to a smaller molecule since previous TiO₂ mediated photocatalytic works focused on the primary processes of either degradations or transformations. In order to get the product of higher molecular complexity, additional reactions would be required. In this presentation we show photocatalytic secondary reactions of nitroarenes in various alcohols to make the 4-alkoxy-2,3-dialkyl-1,2,3,4-tetrahydroquinolines in 30-45% isolated yields. A prototype reaction, using 3-nitrotoluene as a substrate, is shown below.



Under similar reaction conditions, other nitroarenes gave heterocycles of a interesting structures. In overall, we have successfully generalized secondary photocatalytic syntheses reactions in which redox couples self assemble in an unique way to afford new heterocycles of novel structures, emanating from the well-established TiO₂ photocatalysis. These photocatalytic reactions might therefore provide a useful synthetic methodology, otherwise difficult to reach.

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