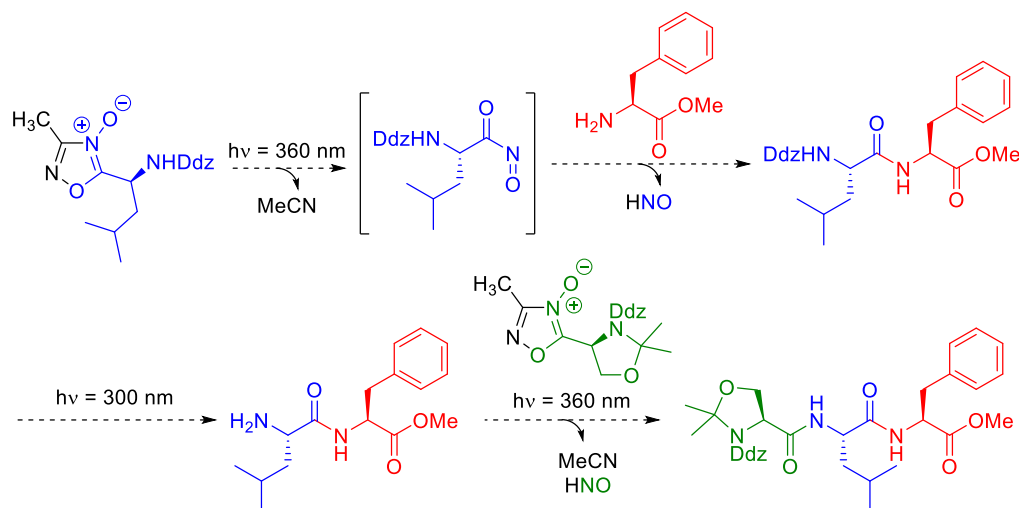


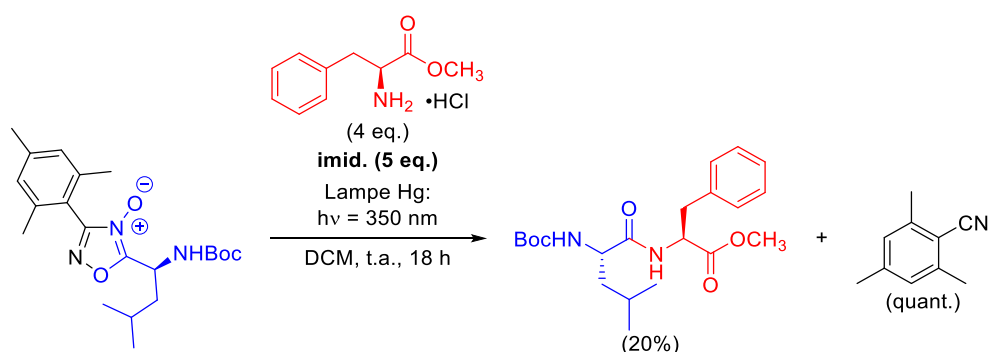
1,2,4-oxadiazole-4-oxides: Synthesis and photochemistry

Jérémie Loup

Amide bonds are amongst the most ubiquitous functionalities found in nature and in pharmaceutical goods. Despite the importance of this bond for the chemical industry, its formation can still be a significant challenge. The development of more ecological alternatives is also a priority. Photochemistry could meet the expectations. 1,2,4-oxadiazole-4-oxides rediscovered by the group of P. Caramella in 1997 could allow the construction of peptides after irradiation with light.¹ Photolysis of these heterocycles results in the formation of a very transient nitrosocarbonyl species. These intermediates are extremely reactive and have found many applications in organic synthesis. Their reactivity with nucleophiles like amines could lead to the formation of peptide bonds.



A new synthetic road allowing an access to these heterocycles was developed. Photolysis of this intermediate bearing an amino acid derivative on the Eastern part in the presence of phenylalanine led to the formation of the expected dipeptide, but at moderate yield.



Jury:

Prof. Dr. Christian Bochet (Thesis supervisor) Prof. Dr. Fabio Zobi (internal co-examiner)
 Dr. Fabrice Gallou (external co-examiner) Prof. Dr. Marco Lattuada (president of the jury)

(1) Quadrelli, P.; Invernizzi, A. G.; Falzoni, M.; Caramella, P. *Tetrahedron* **1997**, *53*, 1787–1796.