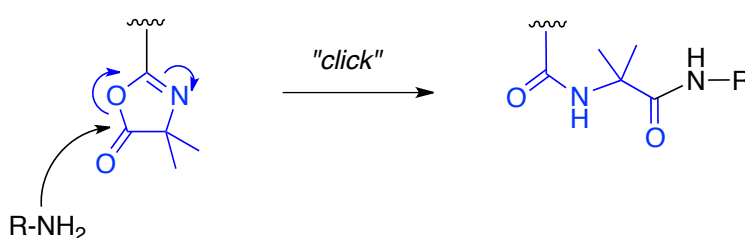


(Macro)Molecular Engineering using Azlactone-based Reagents and Polymers

Laurent FONTAINE

Institut des Molécules et Matériaux du Mans (IMMM)
UMR 6283 CNRS – Le Mans Université
Av. O. Messiaen, 72085 Le Mans cedex, France
laurent.fontaine@univ-lemans.fr

The azlactone (or oxazolone) ring reacts under mild conditions with primary amines at room temperature in the absence of catalyst in organic or aqueous media without formation of a byproduct, a reaction that can be regarded as proceeding with the advantages associated with conventional ‘click’-type reactions.¹ We have investigated azlactone-functionalized reagents and polymers as a platform for the design of new reactive and thermoresponsive polymers,²⁻⁵ functional nanoparticles,^{2,6,7} and heterobifunctional linkers.⁸



This presentation will describe our work to design and to prepare new heterobifunctional linkers, reactive polymers, and functional nanoparticles by using orthogonal click chemistry reactions with emphasis on our most recent results using the azlactone moiety for polymer ligation and bioconjugation.

¹ H. T. Ho, M. E. Levere, D. Fournier, V. Montembault, S. Pascual, L. Fontaine, *Aust. J. Chem.* **2012**, *65*, 970-977; M. E. Buck, D. M. Lynn, *Polym. Chem.* **2012**, *3*, 66-80.

² M. E. Levere, H. T. Ho, S. Pascual, L. Fontaine, *Polym. Chem.* **2011**, *2*, 2878-2887.

³ H. T. Ho, M. E. Levere, S. Pascual, V. Montembault, A. Caruso, N. Casse, L. Fontaine, *Polym. Chem.* **2013**, *4*, 675-685.

⁴ H. T. Ho, F. Leroux, S. Pascual, V. Montembault, L. Fontaine, *Macromol. Rapid Commun.* **2012**, *33*, 1753-1758.

⁵ V. Delplace, S. Harrison, T. H. Ho, A. Tardy, Y. Guillaneuf, S. Pascual, L. Fontaine, J. Nicolas, *Macromolecules* **2015**, *48*, 2087-2097.

⁶ M. Le Bohec, M. Banère, S. Piogé, S. Pascual, L. Benyahia, L. Fontaine, *Polym. Chem.* **2016**, *7*, 6834-6842.

⁷ Y. Prai-In, K. Tankanya, B. Rutnakornpituk, U. Wichai, V. Montembault, S. Pascual, L. Fontaine, M. Rutnakornpituk, *Polymer* **2012**, *53*, 113-120.

⁸ L. Fontaine, H. T. Ho, S. Pascual, V. Montembault, PCT WO2014060357 & US 20150285811A1.