Non natural amino acids: from the synthesis to peptide architectures

Professor **Maria Luisa GELMI**

Dipartimento di Scienze Farmaceutiche – Sezione di Chimica Generale e Organica,
Università degli Studi di Milano, Italy

Constrained non-natural amino acids (AAs) are of relevance since they provide specific 3D-structural platforms when inserted in peptide sequences. These new architectures are of great interest in a wide range of applications, from catalysis to electrochemistry, biology and nanomedicine. The use of these amino acids in peptide synthesis requires their availability in large amount and in enantiopure form. The preparation of three different classes of new constrained amino acids, i.e. conformationally constrained α,α-amino acids, β-amino acids and δ-amino acids, will be presented.

The adopted synthetic protocols took advantage of few synthetic steps from readily available starting materials. By the way of asymmetric syntheses, we were able to control the diastereoselection thus obtaining enantiopure compounds. Their ability to induce specific secondary structure when inserted in peptide sequences will be discussed. We will also focus on different applications, targeted to nanomaterials and biological applications, on the basis of their specific architecture.