Tao, K., Levin, A., Adler-Abramovich, L., Gazit, E. Fmoc-modified amino acids and short peptides: simple bio-inspired building blocks for the fabrication of functional materials. ***Chem. Soc. Rev.***; 2016: *In press*.

Abstract: Amino acids and short peptides modified with the 9-fluorenylmethyloxycarbonyl (Fmoc) group possess eminent self-assembly features and show distinct potential for applications due to the inherent hydrophobicity and aromaticity of the Fmoc moiety which can promote the association of building blocks. Given the extensive study and numerous publications in this field, it is necessary to summarize the recent progress concerning these important bio-inspired building blocks. Therefore, in this review, we explore the self-organization of this class of functional molecules from three aspects, i.e., Fmoc-modified individual amino acids, Fmoc-modified di- and tripeptides, and Fmoc-modified tetra- and pentapeptides. The relevant properties and applications related to cell cultivation, bio-templating, optical, drug delivery, catalytic, therapeutic and antibiotic properties are subsequently summarized. Finally, some existing questions impeding the development of Fmoc-modified simple biomolecules are discussed, and corresponding strategies and outlooks are suggested.