MS35-P30 | HALOGENATION DICTATES ARCHITECTURES AND PROPERTIES OF AMYLOID PEPTIDES

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Besides pathological roles in many diseases, *e.g.*, Alzheimer's, Parkinson's, Creutzfeldt–Jakob, and Huntington's, amyloid peptide architectures have found many other non-biological applications such as forming highly ordered nanomaterials. Together with their biocompatibility and the ease of production, amyloidogenic peptides show a very versatile polymorphic behavior yielding a broad range of hierarchical structures, such as tapes, ribbons, fibers, nanoparticles, and nanotubes. Subtle variations in the experimental conditions, peptide sequence or its chemical functionalization may impact the self-assembly pathway and, consequently, the resulting nanostructures. Here we report that depending on the number, position, and nature of the halogen atoms introduced into either one or both phenylalanine benzene rings of the amyloid β peptide-derived core-sequences such as DFNKF (H_2N-Asp-Phe-Asn-Lys-Phe-COOH) and KLVFF (H_2N-Lys-Leu-Val-Phe-Phe-COOH), different architectures and properties are obtained in a controlled manner [1].

[1] Pizzi, A., Demitri, N., Terraneo, G. & Metrangolo, P. (2018). *CrystEngComm*. **20**, 5321–5326.
[2] Pizzi, A., Pigliacelli, C., Gori, A., Ikkala, O., Demitri, N., Terraneo, G., Castelletto, V. & Hamley, I. W. (2017). *Nanoscale*. 9805–9810.