Title:	Dimension switchable auto-fluorescent peptide-based 1D and 2D nano-assemblies and their self-influence on intracellular fate and drug delivery
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Abstract:	The production of dynamic, environment-responsive shape-tunable biomaterials marks a significant step forward in the construction of synthetic materials that can easily rival their natural counterparts. Significant progress has been made in the self-assembly of bio-materials. However, the self-assembly of a peptide into morphologically distinct auto-fluorescent nanostructures, without the incorporation of any external moiety is still in its infancy. Hence, in this study, we have developed peptide-based self-assembled auto-fluorescent nanostructures that can shuttle between 1D and 2D morphologies. Different morphological nanostructures are well known to have varied cellular internalization efficiencies. Taking advantage of our morphologically different particles emanating from the same peptide monomer, we further explored the intracellular fate of our nanostructures. We observed that the nanostructures' cellular internalization is a complex process that gets influenced by particle morphology and this might further affect their intracellular drug delivery potential. Overall, this study provides initial cues for the preparation of environment-responsive shape-shifting peptide-nano assemblies. Efforts have also been made to understand their shape driven cellular uptake behaviour, along with establishing them as nanocarriers for the cellular delivery of therapeutic molecules.
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