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Supramolecular templating of tunable peptide-melanins

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Melanins are pigments shared across the living world, serving key functions including UV protection, coloration and free radical scavenging. These properties are of value in technological applications, however, despite progress, biological melanin formation, involving controlled catalytic oxidation of tyrosine residues directed by reactant compartmentalization, is poorly understood- limiting production of synthetic melanins with desired properties. We demonstrate that sequence design in tyrosine containing tri-peptides gives rise to precise control over tyrosine accessibility, reactivity and presentation, allow for the oxidation and polymerization pathway to be controlled. In this approach, the supramolecular order of tri-peptides provides a template for the formation of low cost, solution processed, biodegradable, minimalistic melanin-inspired materials with tunable electrical and optical properties.

Biography

Dr. Ayala Lampel is a postdoctoral research associate in Prof. Rein Ulijn's research group in the Nanoscience Initiative at CUNY ASRC, and an awardee of an Israeli Council for Higher Education Postdoctoral Fellowship. Her work is focused on functional supramolecular materials design for biological systems. Prior to this, Ayala received her PhD in Biotechnology at Tel Aviv University, with Prof. Ehud Gazit, focusing on the viral capsid assembly process and antiviral design tools, and a BSc in Neuroscience (BSc Program in Neuroscience for Outstanding Students, Tel Aviv University).

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