

## FUNCTIONAL SUPRAMOLECULAR CHEMISTRY

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This lecture will focus on synthetic organic, molecular and supramolecular systems with significant activities. Emphasis is on the integration of underrecognized or even new concepts to get into contact on the molecular level, in the hope that fundamentally new approaches to create function will ultimately allow us to tackle challenges that are otherwise beyond reach. Functions covered will include catalysis with anion- $\pi$  interactions,<sup>1</sup> chalcogen, pnictogen and tetrel bonds,<sup>2</sup> with catalysts reaching from naphthalenediimides (NDIs)<sup>1</sup> and dithienothiophenes (DTTs)<sup>2</sup> to carbon nanotubes, foldamers and antimony complexes, and reactions from enolate, enamine, iminium and Diels-Alder chemistry to natural product inspired polyether cascade cyclizations. Among other functions of interest are mechanosensitive fluorescent probes that change color like lobsters during cooking and attract much interest to image physical forces in living cells.<sup>2</sup> If time permits, dynamic covalent exchange chemistry will be employed to find new ways into cells, with interests moving from poly(disulfide)s to increasingly unorthodox cyclic oligochalcogenides (COCs), culminating in diselenides as molecular walkers and natural product derived benzopolysulfanes as adaptive benzopolysulfane networks).<sup>3</sup>

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3. Cheng, Y.; Zong, L.; Lopez-Andarias, J.; Bartolami, E.; Okamoto, Y.; Ward, T. R.; Sakai, N.; Matile, S. *Angew. Chem. Int. Ed.* **2019**, *58*, 9522–9526.