

# Oral Contributions

## [MS25] Molecular interactions: hydrogen bonding, halogen bonding, and beyond

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### [MS25 - 01] Tailoring Molecular Recognition Among Porphyrin Tectons. Israel Goldberg

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formulations of porphyrin-based supramolecular solids from suitably functionalized building blocks, utilizing a variety of molecular recognition synthons between the porphyrin scaffolds. [1] The chemical and structural diversity of porphyrins allows us to reasonably control their self-assembly process and to alter systematically the composition and topology of the supramolecular arrays that form. Facile functionalization of these building blocks can be accomplished at the equatorial positions on the porphyrin periphery as well as on the axial ligands that are attached to the core-inserted metal ions.

In this presentation we will describe different methodologies that have been used for assembling porphyrin-based networks primarily by self-complementary halogen-bonding as well as by hydrogen bonding. [2-6] Investigation of halogen-bonding-driven porphyrin assemblies offers in particular a new challenge in crystal engineering. Most recently, diversely activated six-coordinate Tin(Ligand)<sub>2</sub> porphyrin tectons have been probed to this end, where the molecular recognition partner-functionalities (either H-atom donors and acceptors, or polarisable halogen electrophiles and electron-rich pyridyl-type Lewis bases) have been purposely incorporated at various sites; one on the porphyrin macrocycle and the other on the axial ligands. [2,3] The results obtained demonstrate new types of porphyrin-based network materials supramolecularly organized

into extended architectures. They confirm that a concerted utilization of either hydrogen bonding or halogen bonding attractions between the large and rigid molecular scaffolds with preorganized and sterically unhindered molecular recognition sites often has adequate driving force during the nucleation stage in solution for the preferred construction of supramolecular assemblies with long-range order.

[1] Goldberg, I. (2008). *CrystEngComm* **10**, 637-645.

[2] Patra, R., Titi, H. M. & Goldberg, I. (2013). *Cryst. Growth. Des.* **13**, 1342-1349.

[3] Titi, H. M., Patra, R. & Goldberg, I. (2013). *Chem. Eur. J.* submitted for publication.

[4] Lipstman, S. & Goldberg, I. (2013). *Cryst. Growth. Des.* **13**, 942-952.

[5] Titi, H. M., Karmakar, A. & Goldberg, I. (2011). *J. Porphyrins Phthalocyanines* **15**, 1250-1257.

[6] Muniappan, S., Lipstman, S. & Goldberg, I. (2008). *Chem. Commun.* 1777-1779.

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