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# Extending the family of tetrahedral tectons: phenyl embraces in supramolecular polymers of tetraphenylmethane-based tetraphosphonic acid templated by organic bases.

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Streszczenie

A missing member of the tetraphenylmethane-based family of supramolecular tectons, tetrakis(4-phosphonophenyl)methane, TPPM (**1**), has been obtained, characterized, and reacted with organic amines that possess modulated conformational flexibility. The obtained adducts serve as a diverse platform for the investigation of the amine templating effect on phenyl embraces, the resulting supramolecular network, and its topology. Hirshfeld surface (HS) analysis has been employed for the investigation of phenyl embraces, which led to the indication of characteristic HS features of 4PE and 6PE phenyl embraces. One can also observe a new subtype of phenyl embrace, namely, HBA-PE (hydrogen bond-assisted phenyl embrace), which constitutes the cooperation of two interactions: strong hydrogen bonding and a phenyl embrace. A topological insight into TPPM hydrogen-bonded networks is also provided. As a result, we found a connection of the amine template type with the periodicity of the underlying supramolecular network. Additionally, we report three previously unknown topologies. The obtainment of an unusual example of a phosphonic acid cocrystal with base (adduct **3**) allowed for the determination of specific 2D fingerprint plot patterns for acid–base structures, with and without proton transfer.

Adres publiczny

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