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Molecular tectonics: Dimensionality and geometry control of silver coordination networks based on pyrazolyl appended thiacalixarenes

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Abstract

© The Royal Society of Chemistry 2016. Combinations of six new coordinating tectons (3-8) tetrakis-pyrazolyl appended calix[4]arenes, blocked in 1,3-A conformation, based on 1 (tetrathiacalix[4]arene) and 2 (tetrathiatetramercapto-calix[4]arene) derivatives, with AgX salts (X = NO₃⁻, BF₄⁻, XF₆⁻ (X = P, As and Sb)) lead to nine new silver coordination networks. The flexible nature of tectons 3-8 (length of the spacer between the macrocycle and the pyrazolyl coordinating unit), their high number of potential coordinating sites and the loose coordination demand of Ag⁺ cation lead to the formation of a large variety of networks with different dimensionality: from 1D (5-AgSbF₆, 5-AgBF₄, 7-AgSbF₆ and 8-AgNO₃) to extended 2D (6-AgBF₄ and 8-AgSbF₆) and to a series of three isostructural porous diamond-like 3D architectures (6-AgXF₆ (X = P, As and Sb)).

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