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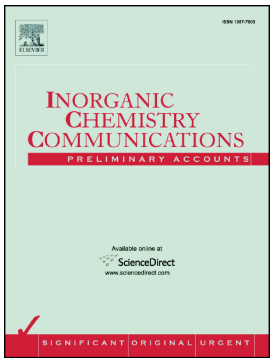

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Tetraphenylmethane and Tetraphenylsilane as Building Units of Coordination Polymers and Supramolecular Networks – A Focus on Tetraphosphonates †

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† Dedicated to Dr. Jerzy Zoń for His 70th birthday.

Abstract

In this work are explored opportunities for supramolecular and coordination chemistry that arise from a combination of phosphonic functional group with tetrahedrally-shaped aromatic units: tetraphenylmethane (TPM) and tetraphenylsilane (TPSi). To provide a complete overview of TPM and TPSi-based tetraphosphonate materials, this paper has been divided into three distinct parts. In the first part are brought together and evaluated most convenient synthetic methods that can be employed for the preparation of TPM and TPSi aromatic scaffolds and of their corresponding tetrabromo derivatives (TPM-Br_4 and TPSi-Br_4). Further, possible routes to tetrakis(4-phosphonophenyl)methane (TPPM) and tetrakis(4-phosphonophenyl)silane (TPPSi) are discussed, with particular attention being paid to the palladium and nickel-catalyzed phosphonylation reactions. The second part of the literature survey is devoted to the overview of useful functionalities of metal-organic