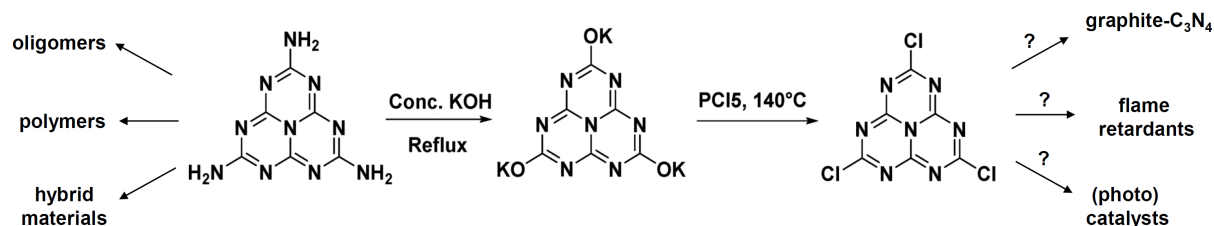


Abstract

## s-Heptazine – a heterocyclic moiety $C_6N_7$ with interesting properties and versatile potential applications

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s-Heptazines (or tri-s-triazines) are an interesting class of compounds containing the tricyclic aromatic building block  $C_6N_7$ . The starting materials are easily obtainable from melamine and have been discovered already in the 1830.[1] Despite this early discovery few researchers were focusing on them, which changed only recently. Starting from melem  $C_6N_7(NH_2)_3$ , cyamelurates  $M(I)_3[C_6N_7O_3]$ , melonates  $M(I)_3[C_6N_7(NCN)_3]$  and the trichloride  $C_6N_7Cl_3$  we investigated the synthesis routes to symmetric and asymmetric molecular and polymeric derivatives. While substitution of the trichloride with amines, phenols and thiols or selenols[2] proceeds in good yields, reactions with other nucleophiles were less successful.[3] Most of the products were structurally analyzed by spectroscopic means and via single crystal X-ray diffraction. An interesting feature of selected s-heptazines is the unusually high thermal stability sometimes exceeding  $500^\circ C$ . Therefore, detailed investigations into the thermal stability were performed. The fact, that graphitic carbon nitride  $g-C_3N_4$  and related ternary polymers like melon  $[C_6N_9H_3]_n$  were found to be semiconductors and useful (photo)catalyst initiated tremendous research activities in recent years. Molecular derivatives might also be useful (photo)catalysts. We observed that some derivatives show (photo)luminescence while others might be useful novel flame retardants.[4]



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