

1,3,5-Triazaadamantanes as Dendrimer Monomers and Polyamine Crosslinkers

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1,3,5-Triazaadamantanes (TAA) are a class of compounds formed from the condensation of three equivalents of an aldehyde with 1,1,1-tris(aminoethyl)ethane derivatives. Under acidic conditions these molecules degrade to their starting materials. Previous work in the group has shown that changing the electronic properties of the aromatic aldehyde alter the degradation kinetics of the TAA molecule. Therefore, these compounds are being investigated as pH sensitive building blocks for degradable biomaterials.

A TAA monomer and TAA crosslinking agent were synthesized. Monomers were used to synthesize dendrimers containing up to 39 TAA units (MW > 30 kDa). Crosslinkers were used to synthesize degradable polyethyleneimine, a highly efficient but toxic gene delivery agent.

