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Carbosilane Building Blocks for Synthesis of Dendritic Macromolecules

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Dendrimers (DDMs) are investigated in various areas including bio- and material science. A development of defined multifunctional dendritic modules with various functional groups to provide them with specific properties (solubility, aggregation and complexation behavior, philicity, luminescence, rigidity, back folding, chirality, guest inclusion, etc.)^{1,2} may overcome issues with (regio)selective functionalization of the DDMs. Such readily available functionalized dendrons and intermediates can be selected, combined and easily processed in standard steps to form new, highly specialized macromolecular dendritic structures with variable properties. Modular synthesis significantly extends the potential to use dendritic structures in numerous fields, for example, but not limited to, in theranostics, a modern method combining therapy and diagnostics (bioapplications)³, and in solid surface modifications (material chemistry)

The prepared dendritic modules can be modified following the same synthetic pathway used for the preparation of the cationic carbosilane DDMs and glycodendrimers. Moreover, the hydroxy/amine linker group enables an attachment of these dendritic modules to various substrates (hydrophobic/hydrophilic chains, multivalent cores) to obtain e. g. amphiphilic segments of dendritic modules or Janus-type dendritic modules.

References

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