

Nithyanandhan, J.; Jayaraman, N., 2002, "Synthesis of poly(alkyl aryl ether) dendrimers", *J. Org. Chem.*, 67, 6282 – 6285.

In this Note, we report the synthesis of poly(alkyl arylether) dendrimers of up to four generations, synthesized by a divergent growth methodology involving phloroglucinol as the core and branching components linked together by pentamethylene linkers. Within the vast majority of dendrimers known currently, 'completely' polyether dendrimers are only very few. We have undertaken an approach to synthesize new types of polyether dendrimers by utilizing the symmetrically functionalized phloroglucinol (1,3,5-trihydroxybenzene) as the core and branching components, which are linked together by pentamethylene spacers. A divergent growth methodology is adopted to synthesize these dendrimers and the iterative synthetic sequence of first phenolic O-alkylation, followed by O-benzyl deprotection reactions is found to be facile. The relative ease of this synthetic sequence allows synthesis of dendrimers up to four generations, possessing 48 functional groups at the periphery in the case of fourth generation dendrimer. Specific molecular features of these dendrimers are (i) the presence of alkyl arylether linkages, which are 'inert' excepting under strongly acidic conditions and (ii) the ability to exhibit hydrophilic exterior and relatively lyophilic interior regions. The facile synthetic methodology and the molecular features of these poly(alkyl arylether) dendrimers offer great potential not only in the synthesis of other modified dendrimers with varied alkyl chain lengths, but also to incorporate them in macromolecular and supramolecular studies.