Polyanionic carbosilane and carbosiloxane metallodendrimers based on cobaltabisdicarbollide derivatives.

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ABSTRACT. Carbosilane and carbosiloxane metallodendrimers, that contain one, four and eight peripheral cobaltabisdicarbollide derivatives have been synthesized using regiospecific hydrosilylation with the anionic cobaltabisdicarbollide derivative [1,1'-μ-SiMeH-3,3'-Co(1,2-$C_2B_9H_{10})_2$]$^-$, **(1)**$^-$, of vinyl terminated dendrimers. A methodology to synthesize a trifunctional molecule containing one cobaltabisdicarbollide and three vinylsilane moieties, **(2)**$^-$, has been developed starting with tetravinylsilane. Different generations of anionic metallacarborane-containing metallodendrimers were constructed via hydrosilylation of the first and second generation of carbosilane dendrimers containing four or eight peripheral vinyl functions with **(1)**$^-$ as the hydrosilylation agent to give metallodendrimers **(3)**$^{4-}$, **(4)**$^{8-}$ and **(5)**$^{8-}$, respectively. Furthermore, it has been possible to apply this methodology to commercial vinyl terminated cyclocarbosiloxanes and a first generation obtained from this, to yield metallodendrimers, **(6)**$^{4-}$, **(7)**$^{4-}$ and **(8)**$^{8-}$ with four, and eight cobaltabisdicarbollide moieties in the periphery of the dendrimer, respectively. Products are fully characterized by FTIR, NMR and UV-Vis spectroscopies. For metallodendrimers with high molecular weights, the UV-Vis absorptions were used for corroborating the full functionalization with cobaltabisdicarbollide moieties attached to the periphery and consequently the unified character of dendrimers. In addition, UV-Vis spectroscopic measurements have also allowed to study the solubility and behaviour in water/DMSO solutions of these metallodendrimers.

KEYWORDS. Macromolecules, dendrimer, carborane, cluster compound, sandwich complexes, carbosilane, boron clusters.