Category

Synthesis of Materials and Unnatural Products

Key words

fullerenes

regioselectivity

n-type materials

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Regioselective Synthesis of 1,4-Di(organo)[60]fullerenes through DMF-assisted Monoaddition of Silylmethyl Grignard Reagents and Subsequent Alkylation Reaction

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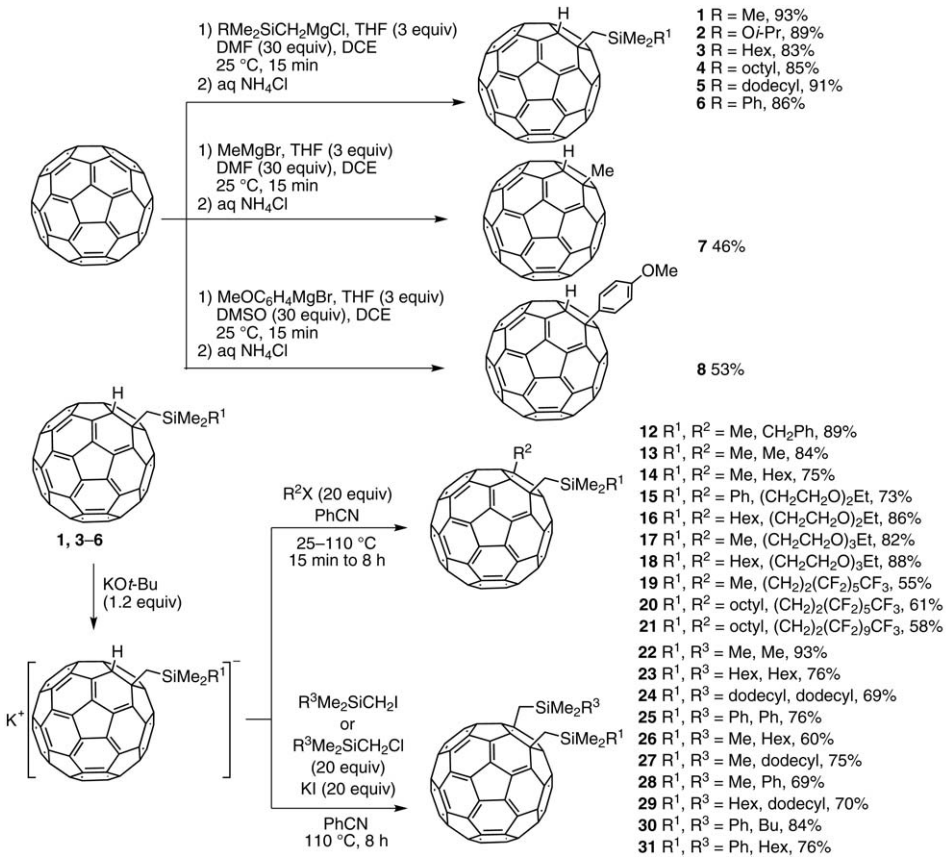
Efficient Regioselective 1,4-Substitution of [60]Fullerenes



Significance: The authors report a two-step regioselective synthesis of 1,4-di(organo)[60]fullerenes. In the first step, DMF-assisted monoaddition of silylmethyl Grignard reagent to [60]fullerenes produces (organo)(hydro)[60]fullerenes. Deprotonation and alkylation in the second step generates di(organo)[60]fullerenes with various functional groups, whose crystal structures, electrochemical and thermal properties have been studied.

Comment: The synthetic difficulties of 1,4-substituted 58π-electron [60]fullerenes make them less explored than their 1,2-substituted counterparts such as PCBM. This efficient approach with high regioselectivity, simple starting materials and easy procedures may lead to new opportunities to the research on fullerene based n-type materials.

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