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Non-natural lipids: Synthesis and characterization of esters from *meta*-carborane-1-carboxylic acid

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Highlights:

- · Derivatives of artificial boron clusters (carboranes) represent non-natural lipids
- · Carborane-1-carboxylic acid esters from long-chain alcohols show wax-like properties
- · Carboranyl waxes can now easily be synthesized via coupling reagent strategy

Abstract

Lipids are defined as apolar molecules comprising as major classes fatty acids and fatty acid esters of normally natural origin. Non-natural components, such as dicarba-*closo*-dodecaboranes (in short carboranes) can also form acids and esters, which reveal lipid-like properties. Carboranes are synthetic boron clusters featuring ten BH and two CH vertices, organized in icosahedral shape. The highly hydrophobic clusters are organic-inorganic hybrid constructs and can be modified at both the cluster boron and the cluster carbon atoms via adjusted organic reactions. Here, we report the synthesis and characterization of lipid esters from *meta*-carborane-1-carboxylic acid using a new coupling reagent strategy. Carborane esters from long-chain alcohols revealed wax-like properties.

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