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Title:	Porous covalent organic nanotubes and their assembly in loops and toroids
Authors:	Moun, Monika (/jspui/browse?type=author&value=Moun%2C+Monika) Bhakar, Monika (/jspui/browse?type=author&value=Bhakar%2C+Monika)
Keywords:	Porous covalent organic nanotubes loops and toroids
Issue Date:	2022
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Citation:	Nature Chemistry, 14(5), 507-514.
Abstract:	Carbon nanotubes, and synthetic organic nanotubes more generally, have in recent decades been widely explored for application in electronic devices, energy storage, catalysis and biosensors. Despite noteworthy progress made in the synthesis of nanotubular architectures with well-defined lengths and diameters, purely covalently bonded organic nanotubes have remained somewhat challenging to prepare. Here we report the synthesis of covalently bonded porous organic nanotubes (CONTs) by Schiff base reaction between a tetra-topic amine-functionalized triptycene and a linear dialdehyde. The spatial orientation of the functional groups promotes the growth of the framework in one dimension, and the strong covalent bonds between carbon, nitrogen and oxygen impart the resulting CONTs with high thermal and chemical stability. Upon ultrasonication, the CONTs form intertwined structures that go on to coil and form toroidal superstructures. Computational studies give some insight into the effect of the solvent in this assembly process.
Description:	Only IISER Mohali authors are available in the record.
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