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A New Level of Hierarchical Structure Control by Use of Supramolecular Self-assembled Dendronized Block Copolymers RAFFAELE MEZZENGA, CHAOXU LI, University of Fribourg, Switzerland, DIETER SCHLUTER, AFANG ZHANG, ETHZ, Switzerland — Block copolymers in which microphase segregation can be combined with supramolecular attachment of side chains to one block, constitute very appealing systems to design hierarchically self-assembled macromolecular materials. Self-organization of these systems is achieved at two length scales: that of the side chains ($\sim 10^0$nm) and that of the block copolymers ($\sim 10^1$-10^2nm). Because of the linear nature of the hosting block, only lamellar organization is typically observed at small length scales. Here we demonstrate that by replacing the linear polymer block with a dendronized polymer capable of participating in supramolecular interactions, one additional degree of freedom (the generation of the dendronized polymer) is introduced to engineer the self-assembly into unprecedented hierarchically ordered bulk structures. Not only this allows controlling beyond current possibilities the structures at the smaller length scale, with the introduction for example, of new columnar rectangular, hexagonal and tetragonal phases, but it may also lead to new functional template materials with increased 3D topological complexity for advanced technologies. References: C. Li, D.A. Schlüter, A.Zhang, R. Mezzenga, *Advanced Materials*, in press.

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