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Complexity in Liquid Crystal Self Assembly

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We have recently introduced the concept of polyphilic molecular tectons to design new and complex types of organization in LC systems. [1] Among them, there are liquid crystalline honeycomb-like arrays of triangular, square, pentagonal and hexagonal cylinders, which were formed by self-assembly of ternary block molecules. More complex cylinder nets composed of cylinders with very different shape and having different materials in the interior of the cylinders were now achieved by using molecular tectons composed of four instead of only three incompatible segments (quaternary block molecules). These LC phases can be described by a multi-color tiling of space. Among these new structures there is the liquid crystalline Kagome (a periodic packing combining hexagonal and triangular cylinders) [2] and numerous other multicolour tiling patterns. This work is part of the ESF supported collaborative EUROCORES (SONS II) project SCALES.

References

- [1] C. Tschierske, *Chem. Soc. Rev.*, **36**, p. 1930 (2007)
[2] B. Glettner, F. Liu, X. Zeng, M. Prehm, U. Baumeister, M. Walker, M. A. Bates, P. Boesecke, G. Ungar, C. Tschierske, *Angew. Chem. Int. Ed.*, **47**, p. 9063 (2007)