analogues of natural products that could, in turn, provide focused structure–activity relationships[7,8]. These same approaches hold promise for expanding scaffold diversity through design of new scaffold-rearranging reactions as well. Such chemical capabilities complement, and expand on, the rapidly moving field of metabolic engineering, which is ever more capable of delivering large quantities of potent and precious complex molecules[9].

At the same time, interdisciplinary opportunities abound. Catalytic chemistry and natural product function-oriented studies can accelerate discovery of optimized structures, and the path to elucidation of function[10]. Expanded interactions among synthetic chemists and natural products colleagues deeply involved with host organisms, biosynthetic pathways and bioinformatics could become the exemplar of greater synergy. The venerable field of biomimetic synthesis can potentially contribute to unfolding biosynthetic studies not only through validation or anticipation of biosynthetic pathways, but also through positing of biosynthetic enzyme functions that are yet to be annotated[11]. Bioinformaticians and synthetic chemists could predict and prepare posited natural product structures, or biosynthetic intermediates, that not only challenge the field of chemical synthesis, but potentially presage actual natural product isolations[12]. And, such synergies may also lead to the proposition of new biosynthetic capabilities that can also stimulate new thinking about bioinformatic data and potential biosynthetic proteins.

In short, the future of natural products could well lie in linking some of the major themes that motivate current research in chemistry and biology. ❐

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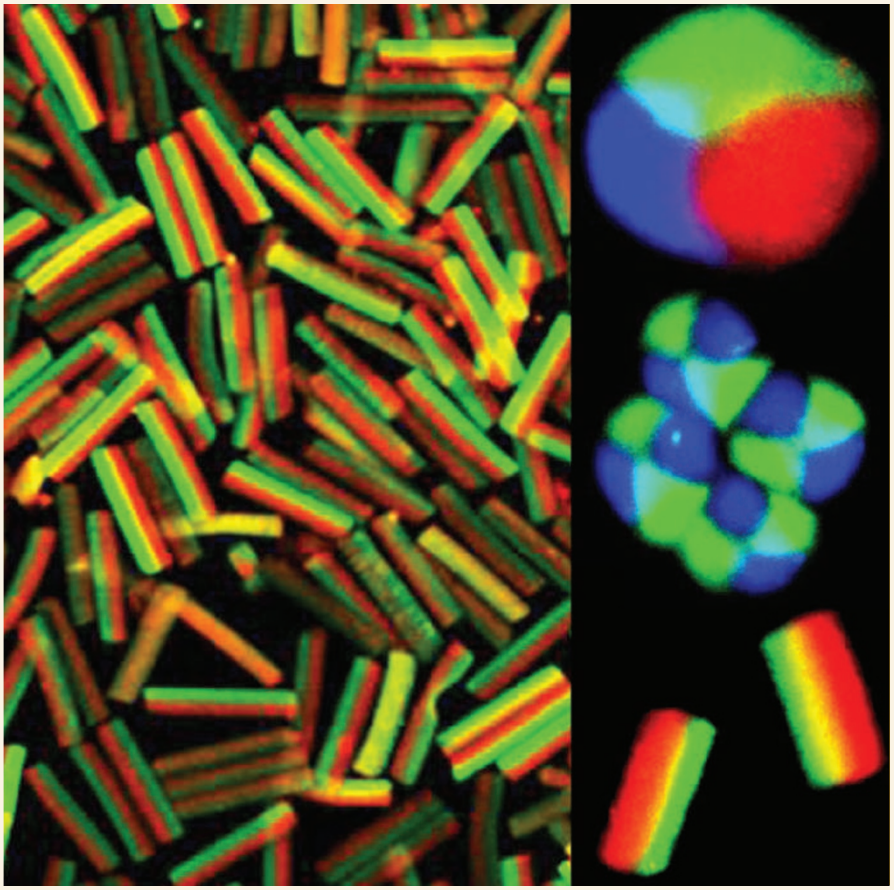
MICROSTRUCTURED PARTICLES

Sectioned cylinders



Micro- and nanoparticles are being investigated for use as capsules for delivering drugs or for bioimaging, with their shape often as important as their size. Hollow or core–shell spheres can be internally functionalized to carry drugs or imaging agents. Particles with different compartments have been made, but only spherical ones thus far.

Now, Joerg Lahann and colleagues from the University of Michigan have made microcylinders with controlled size and shape that have two, three or even four compartments (pictured; *Angew. Chem. Int. Ed.* **48,** 4589–4593; 2009). They used electrohydrodynamic spinning from two separate jets to create sectioned polymer microfibres and then cut them into cylinders around 50 μm long by cryosectioning. The polymer was a lactide–glycolide copolymer, chosen for its biodegradable properties that are useful in many biomedical applications.

Loading the different compartments with different dye molecules meant that the structures were clearly visible under confocal laser scanning microscopy. The number and arrangement of the compartments could be controlled by altering the electrospinning process.

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