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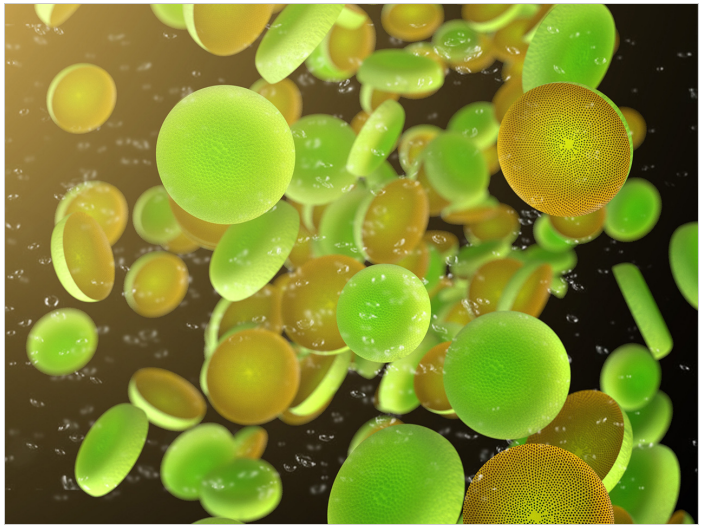

Microstructures: Scalable production of uniform diatom monolayers

A simple technique for harnessing the remarkable properties of algal exoskeletons could lead to advances in nanotechnologies. Frustules, the silica cell walls of diatomic algae, are intricate and multilayered porous structures with extraordinary strength, large surface areas and unique optical characteristics. Controlling the alignment and orientation of the frustules is key to exploiting their attributes but has so far proved challenging, limiting their potential applications. Now, Xin Zhang at Boston University in Massachusetts, United States, and her colleagues have developed an efficient method for generating uniformly oriented frustules. The team pumped nitrogen bubbles under water, on which the dish-shaped frustules floated, forming clusters of closely packed, similarly oriented frustule monolayers on the surface. Their findings demonstrate a scalable process for producing large areas of aligned frustules that could facilitate micro/nanomanufacturing of biotemplated structures for a host of practical technological applications.

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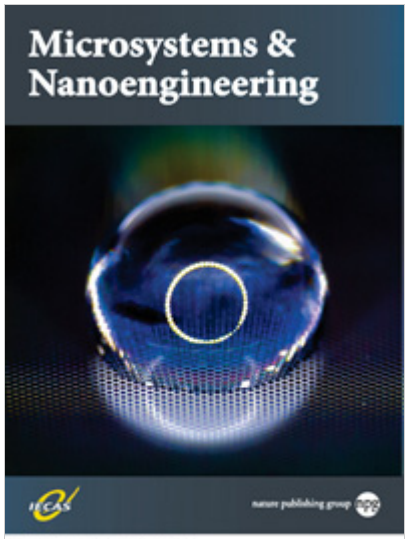

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