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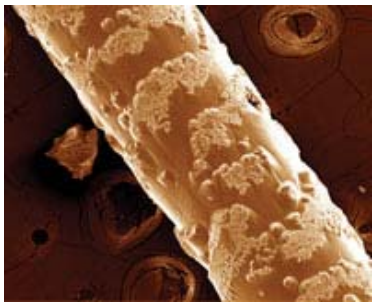
Tubes form in the wake of bubbles

Rising gas bubbles in a hi-tech ‘crystal garden’ have been creating tubes during precipitations.

The size of the tubes that rise with the bubbles out of the precipitation reaction solutions of sodium silicate and copper sulfate, are related to the bubble’s radius. Extra large bubbles float more easily out of the ‘reaction zone’ and don’t leave tubes behind as they rise. Smaller bubbles make tubes that can collapse into helical ribbons under different pressures.



Oliver Steinbock and colleagues at Florida State University, US, hope to use the bubbles to make sense of tubular growth dynamics. They have an eye to applying their results to other precipitation systems, like the ‘black smokers’ in hydrothermal ocean vents.

‘Our experiments will help to understand tube morphogenesis in general and possibly suggest unconventional strategies for the fabrication of novel materials,’ said Steinbock, but he admits there is much to learn before the results can be used elsewhere. ‘Conventional equilibrium measurements will not cut to the heart of this non-equilibrium system,’ he said, ‘we still understand very little about this system.’ *Katharine Sanderson*

References

S Thouvenel-Romans, J J Pagano and O Steinbock, *Phys. Chem. Chem. Phys*., 2005 (DOI: 10.1039/b504407c)