

# Nanotechnology designed to speed up the hardening of concrete

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Researchers at Tecalia and the ICMCB-CNRS have recently published the article "Ultra-Fast Supercritical Hydrothermal Synthesis of Tobermorite under Thermodynamically Metastable Conditions" in the prestigious scientific journal *Angewandte Chemie*.

The article proposes an ultrarapid [synthesis](#) of nano-tobermorite, a nanoparticle used to speed up the hardening of concrete; it is regarded as a high added-value ingredient. The researchers developed a method of producing tobermorite nanofibres in water in supercritical conditions (400 °C and 235 bar); previously, it was considered impossible to achieve at temperatures above 200 °C. Additionally, the result is of a higher quality made possible by a piece of non-traditional equipment that allows the conditions and [reaction times](#) to be thoroughly monitored.

The technology is, according to the researchers, an advanced manufacturing technique for producing [nanoparticles](#). Firstly, tobermorite nanoparticles can be synthesised within 10 seconds as opposed to the period of several days required by traditional synthesis methods. Secondly, the synthesis method using supercritical fluids produces better replicas of natural tobermorite; in other words, it allows more perfect nanoparticles to be produced.

**More information:** Marta Diez-Garcia et al. Frontispiece: Ultra-Fast Supercritical Hydrothermal Synthesis of Tobermorite under Thermodynamically Metastable Conditions, *Angewandte Chemie International Edition* (2017). [DOI: 10.1002/anie.201781261](https://doi.org/10.1002/anie.201781261)

Provided by Elhuyar Fundazioa

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