

Fractal structures in magnetic soap films

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A magnetic field can be used to control film thinning and film stability by adding magnetic nanoparticles to a soap film. The thin black centre of a magnetic soap film at five instants of time is shown, each separated by ~ 10 s. The growth of the black centre over time reveals a network of white structures exhibiting a fractal pattern. These structures, which contain surfactants and magnetite nanoparticles, migrate in the direction of increasing magnetic intensity; this affects the drainage dynamics and film lifetime.

Without
magnet

