

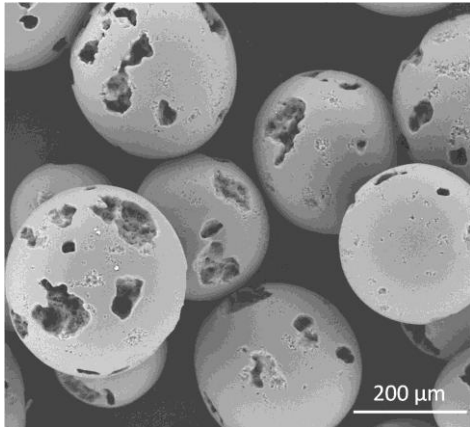
Porous structure of emulsion-templated soft acoustic Mie resonators

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This work is on the general topic of finding new experimental paths to build locally resonant acoustic metamaterials. Soft and compressible porous silicones have very low internal sound speed and were recently used to build acoustic Mie micro-resonators, which were the key component of a 3D acoustic metafluid¹⁻³. We use emulsion-templating methods to synthesize



Soft porous resonators

synthesis of materials with tunable acoustic properties.

porous materials with controlled morphologies and mechanical properties. We show that the initial state of the emulsion has a strong impact on the porous structure and properties of the obtained material. By varying the initial emulsion formulation parameters, we are able to tune the interaction between emulsion droplets and, consequently, the porous structure of the final materials. Two classes of materials could thus be obtained with either an interconnected or a closed-cells structure. These two systems present completely different behavior upon drying, which results in various mechanical and acoustic properties⁴. This work opens new perspectives for the

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