

# Liquid metal capsules for autonomic thermal energy control

## Supplementary Information

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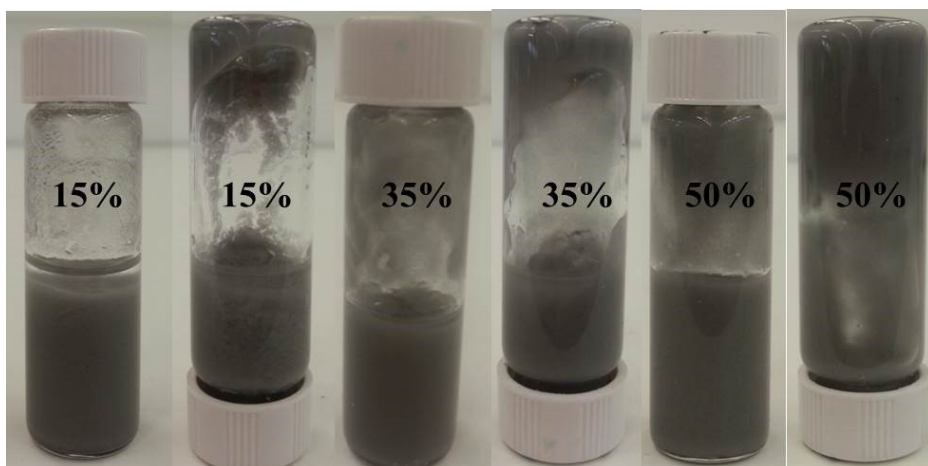
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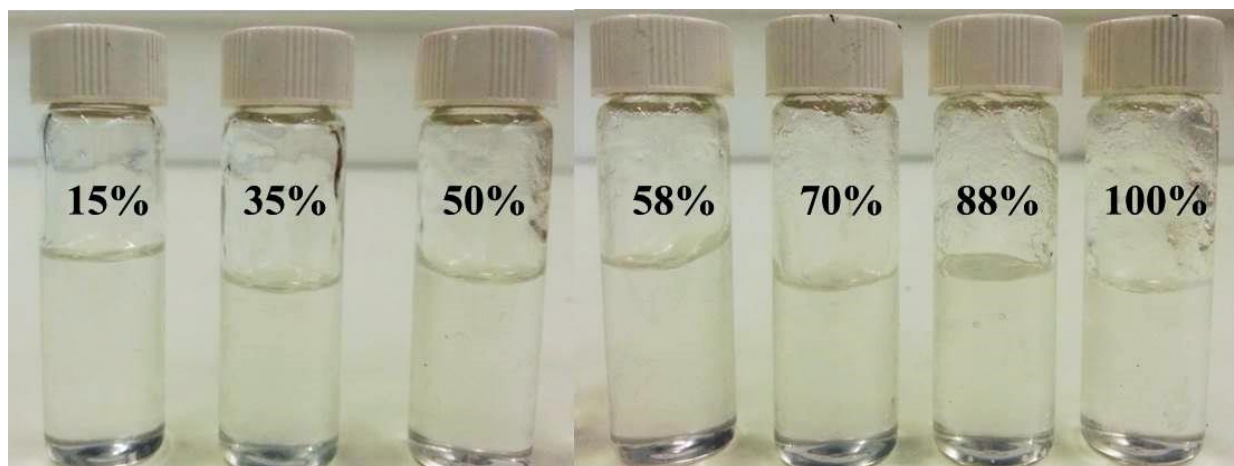
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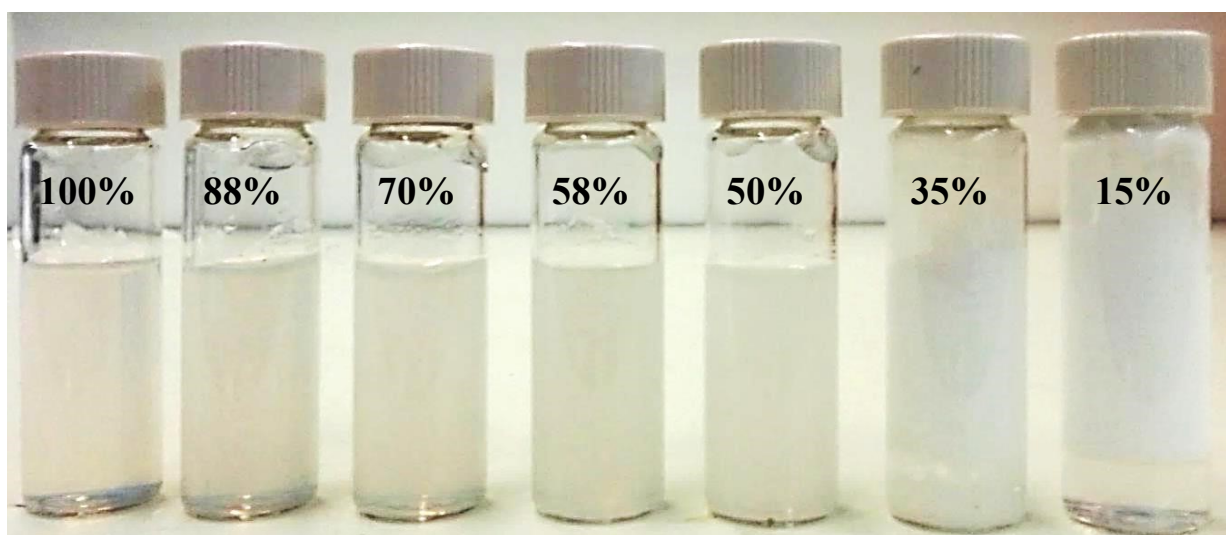
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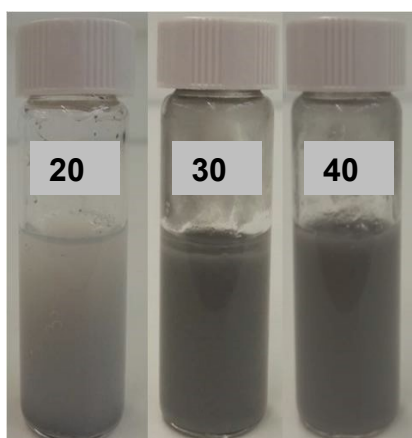
**Figure S1.** Photos of freshly prepared eutectic capsules in cyclohexane containing 20 mg/mL GaIn and 30 mg/mL silica nanoparticles with different %SiOH content on silica nanoparticles.



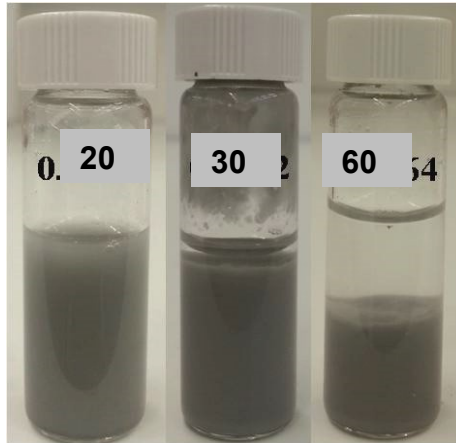
**Figure S2.** Photos of vessels containing 30 mg/mL silica nanoparticles in cyclohexane with different %SiOH.



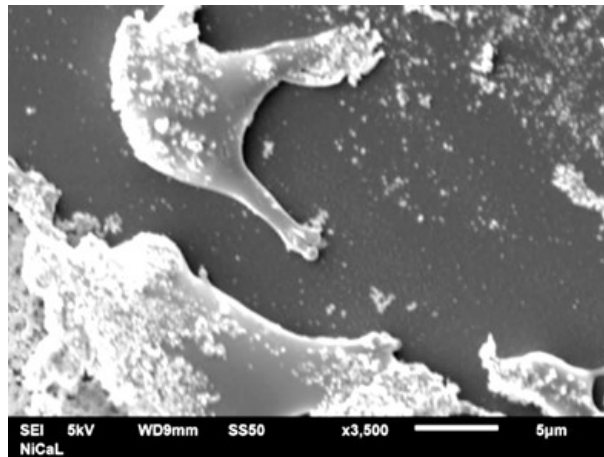
**Figure S3.** Photos of vessels containing 30 mg/mL silica nanoparticles with different % SiOH in water. Stable dispersions are formed from 100% to 50% SiOH groups on silica nanoparticles.



**Figure S4.** Photos of eutectic capsules in water containing 20 mg/mL GaIn alloy and different concentrations of 50% SiOH-modified silica nanoparticles (in mg/mL) after 8 days.



**Figure S5.** Photos of eutectic capsules in water containing different concentration of GaIn alloy (in mg/mL) and 30 mg/mL of 50% SiOH silica particles after 8 days.



**Figure S6.** SEM of damaged eutectic capsules showing the liquid nature of the inner encapsulate core.

**Table S1.** The weight changes of Al/Mg alloy sample (2cm<sup>2</sup> surface and 0.3 cm thickness) with incorporated GaIn eutectic capsules during thermal cycling

Al/Mg alloy + GaIn capsules	Weight	% of weight changes
Initial sample	1.64 g	0
1 <sup>st</sup> cycle	1.63 g	-0.6
5 <sup>th</sup> cycle	1.63 g	-0.6
10 <sup>th</sup> cycle	1.64	0
50 <sup>th</sup> cycle	1.63	-0.6

