

Gelling on heating

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Exploiting the concept of competing interactions, it is possible to design a binary mixture of patchy particles that, on the computer, forms a reversible gel upon heating. With the appropriate selection of multiple DNA sequences it is possible also to produce these particles in bulk quantities in the laboratory, creating a one-pot DNA hydrogel that melts both on heating and on cooling. Dynamic light scattering experiments show that the gel changes its structural relaxation time by several orders of magnitude in a temperature range of a few degrees, dissolving both at high and at low temperatures. This study provides a neat example of the possibility to rationally design biocompatible bulk materials with unconventional phase diagrams and tunable properties.

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Gelling by heating
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