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Capillary self-assembly of floating bodies SUNGHWAN JUNG, PAUL THOMPSON, JOHN BUSH, Department of Mathematics, Massachusetts Institute of Technology — We study the self-assembly of bodies supported on the water surface by surface tension. Attractive and repulsive capillary forces exist between menisci of, respectively, the same and opposite signs. In nature, floating objects (e.g. mosquito larvae) thus interact through capillary forces to form coherent packings on the water surface. We here present the results of an experimental investigation of such capillary pattern formation. Thin elliptical metal sheets were designed to have variable shape, flexibility and mass distribution. On the water surface, mono-, bi-, or tri-polar menisci could thus be achieved. The influence of the form of the menisci on the packings arising from the interaction of multiple floaters is explored. Biological applications are discussed.

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