Do we now understand entangled unlinked rings? We are closer, to be sure, but enough questions still remain to require more intense scrutiny. It is hard to make very highly entangled polystyrenes because of the bulkiness of the monomer: experiments on the considerably skinnier polybutadiene will test these ideas to the limit. Rheological probes are overdue, as are structural ones such as neutron scattering, and the rich seam of nonlinear response has yet to be mined. Furthermore, the topic has implications beyond finessing of our understanding of entangled polymer dynamics. Some DNA separation techniques rely on ring-polymer dynamics. And in a strange leap of concepts from one field of physics to another, some astrophysical media interlaced with loops of magnetic field may behave just like viscoelastic fluids supporting ring-polymers[6]. From fundamentals of entanglements to the fluid dynamics of the Sun, rings retain a powerful fascination. Whether uncovering their secrets proves as endless a story as the rings themselves remains to be seen.

References

1. Doi, M. & Edwards, S. F. *The Theory of Polymer Dynamics* (Oxford Univ. Press, 1986)
2. McLeish, T. C. B. *Adv. Phys.* **51,** 1379–1527 (2002).
3. Kapnistos, M. *et al. Nature Mater.* **7**, 997–1002 (2008).
4. Obhukov, S. P., Rubinstein, M. & Duke, T. *Phys. Rev. Lett.* **73,** 1263–1266 (1994).
5. Cates, M. E. & Deutsch, J. M. *J. Phys. (Paris)* **47,** 2121–2128 (1986).
6. Longcope, D. W., McLeish, T. C. B. & Fisher, G. H. *Astrophys. J.* **599,** 661–674 (2003).

Let the Sun shine

Nature Materials **7,** 825 (2008); published online: 27 October 2008; corrected after print: 4 November 2008.

In the version of this Editorial originally published online, the second sentence of the first paragraph should have referred to 'electricity' needs, and to a total area of '100 km × 100 km', not '100 square kilometres'. The sentence has been corrected in the HTML and PDF versions of the Editorial.