

Supplemental

J. Zsolt Terdik*

*John A. Paulson School of Engineering and Applied Sciences,
Harvard University, Cambridge, MA 02138.*

David A. Weitz

*John A. Paulson School of Engineering and Applied Sciences,
Harvard University, Cambridge, MA 02138.*

*Department of Physics, Harvard University, Cambridge, MA 02138 and
Wyss Institute for Biologically Inspired Engineering,
Harvard University, Boston, MA 02115.*

Frans Spaepen

*John A. Paulson School of Engineering and Applied Sciences,
Harvard University, Cambridge, MA 02138.*

(Dated: April 13, 2024)

* terdik@g.harvard.edu

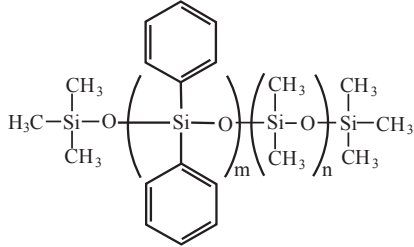
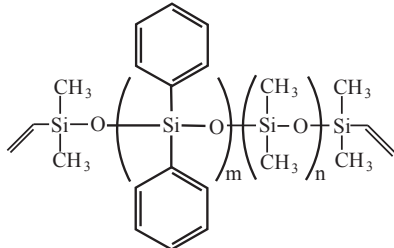
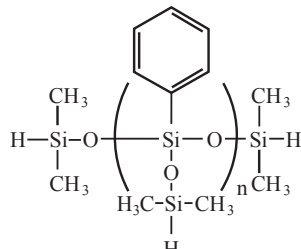
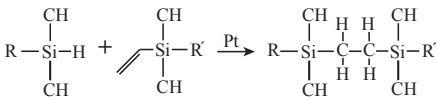
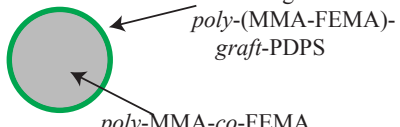
<ul style="list-style-type: none"> - methyl terminated <i>poly</i>-diphenyl-dimethyl siloxane - Components: λ and diluent for $b_1, b_2,$ and c - Gelest PDM-0821 and PDM-1922 	
<ul style="list-style-type: none"> - vinyl terminated <i>poly</i>-diphenyl-dimethyl siloxane (PDPS) - Components: b_1 and b_2 - Gelest: PDV-1641 and PDV-0541 	
<ul style="list-style-type: none"> - hydride terminated <i>poly</i>-phenyl(dimethylhydrosiloxy) siloxane - Components: c - Gelest HDP-111 	
<ul style="list-style-type: none"> - Platinum catalyzed hydrosilylation reaction for curing PDPS gels. 	
<ul style="list-style-type: none"> - Tracer particle stabilized by graft co-polymer formed by free-radical polymerization of MMA, FEMA and vinyl terminated PDPS 	

FIG. 1. *Chemical structures and reactions for ultrasoft PDPS gels* The chemical structures for PDPS liquid filler (first row), vinyl terminated PDPS base polymers (2nd row), hydride functional crosslinker (third row) are shown. The Pt-catalyzed hydrosilylation reaction between vinyl and hydride functional polymers is shown in the fourth row. Finally, the structure of the PDPS stabilized colloidal particle is shown schematically in the fifth row. The structure of the stabilizing brush is a random co-polymer formed from free radical polymerization of four components: methyl methacrylate, fluoro-ethyl methacrylate, and two vinyl terminated PDPS polymers with average diphenyl substitution matching the PDPS gels.