SUPPORTING INFORMATION

Hydrophilic polydimethylsiloxane-based sponges for dewatering applications

I.M. Sosnin[1,2], S. Vlassov[1], E.G. Akimov[1,2], V.I. Agenkov[2], L.M. Dorogin[1,3*]

[1]ITMO University, Kronverkskiy pr., 49, 197101 St.Petersburg, Russia

[2]Togliatti State University, Belorusskaya Str., 14, 445020, Togliatti, Russia

[3]Department of Industrial Engineering, University of Padova, Via Gradenigo 6/a, 35131 Padova, Italy

*e-mail: leonid.dorogin@majorrevision.com

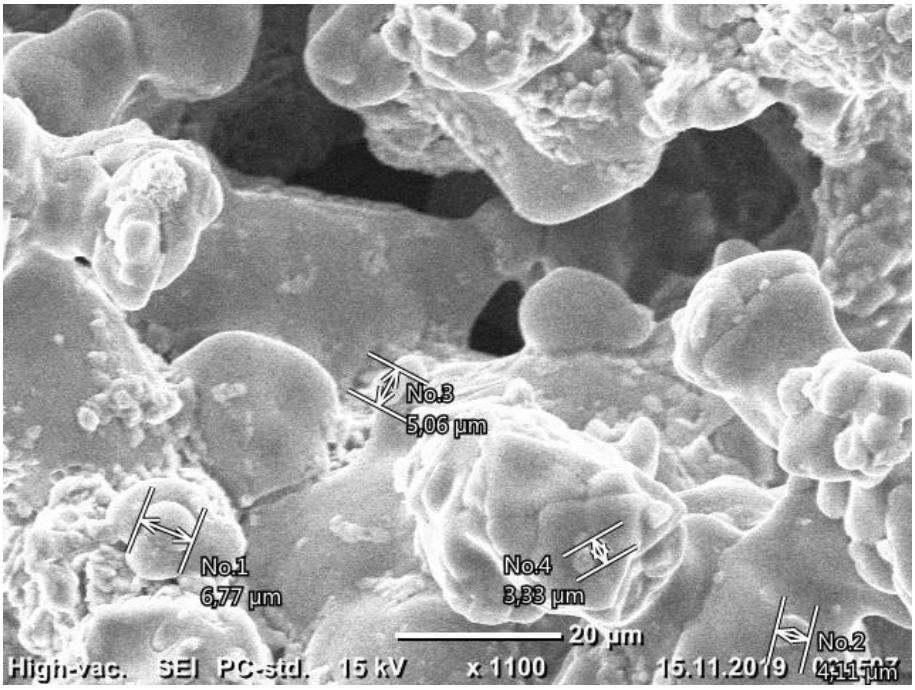

Figure S1. SEM image of the $ZnCl_2$ particles.

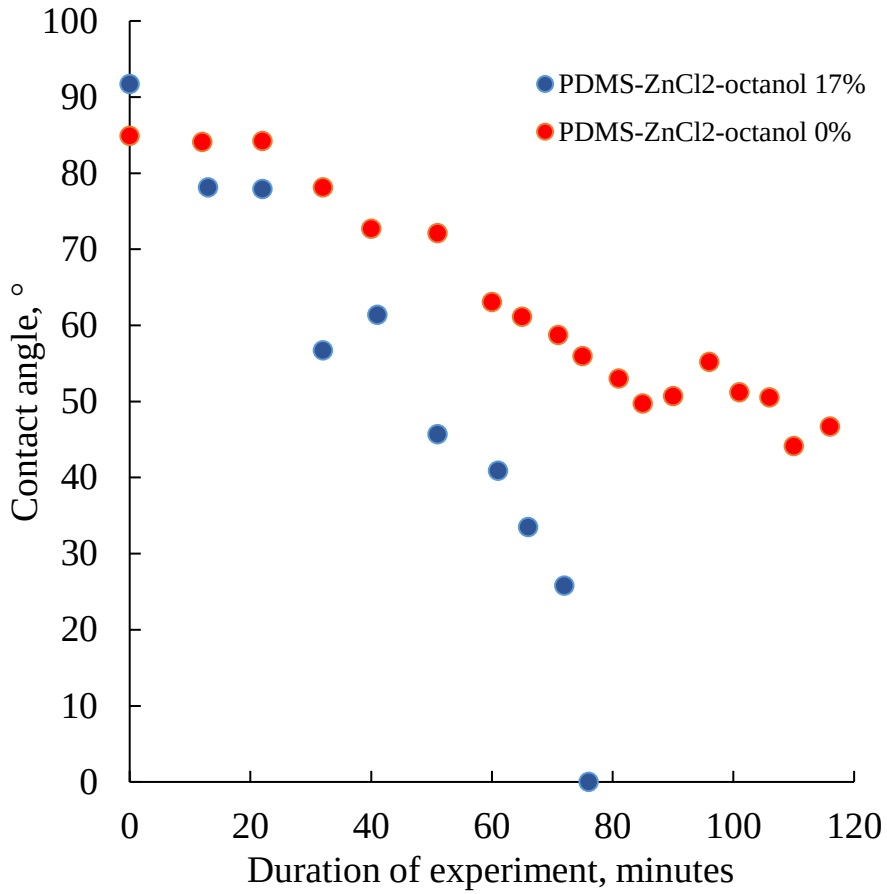

Figure S2. Evolution of water contact angle on the PDMS sponges with various 1-octanol content in time counted as from water droplet deposition.

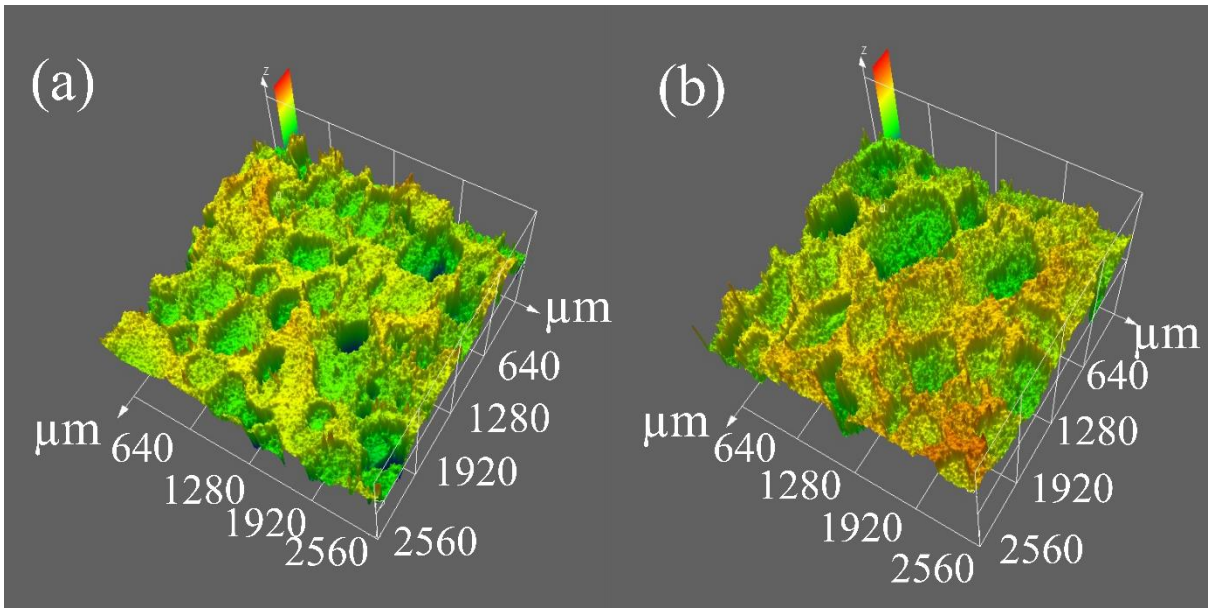

Figure S3. Images of surface of the PDMS sponge made with confocal microscopy (Olympus lext ols4000): (a) before swilling, (b) after swelling and drying.

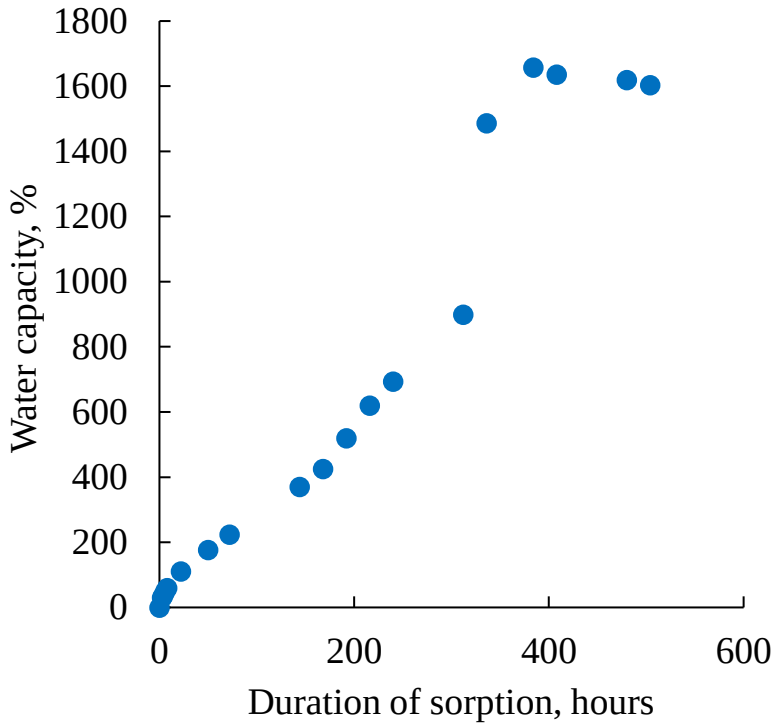

Figure S4. Water capacity as a function of sorption time from the mass measurements of PDMS sponge with 17% 1-octanol content.

Table S1. Water capacity measurement data for the PDMS sponges after immersion in water.

Concentration of 1-octanol, %	Water capacity, %
0	58±6
5	560±85
7	690±131
10	878±202
12	1007±242
17	1657±398

Complementary experiments

We conducted additional experiments of the dewatering of used transformer oil containing 0.5% water mass. At first, using the sponge as a membrane, we passed the oil through the sponge; at the output, we obtained pure water-free oil. Also, we immersed our PDMS sponges in transformer oil. During the immersion tests for 24

hours, the mass of the sponges changed negligibly. The sponge did not dissolve in oil due to the hydrophilic properties of the pore surface in both cases.