## **Supplementary Information**

## Load-dependent surface nanomechanical properties of poly-HEMA hydrogels in aqueous medium

Gen Li,<sup>1,</sup> \* Illia Dobryden,<sup>1</sup> Eric Johansson Salazar-Sandoval,<sup>2</sup> Mats Johansson<sup>3</sup> and Per M. Claesson<sup>1, 2</sup>

<sup>1</sup> KTH Royal Institute of Technology, School of Engineering Sciences in Chemistry, Biotechnology and Health, Department of Chemistry, Division of Surface and Corrosion Science, Drottning Kristinas väg 51, SE-10044 Stockholm, Sweden

<sup>2</sup>Rise Research Institutes of Sweden, Division of Bioscience and Materials, SE-114 86 Stockholm, Sweden

3 KTH Royal Institute of Technology, School of Engineering Sciences in Chemistry, Biotechnology and Health, Department of Fibre & Polymer Technology, Teknikringen 48, SE-10044 Stockholm, Sweden

\* Corresponding author. Email: genl@kth.se

## **Tip geometry**

The tip geometry was determined with SEM before and after the nanomechanical measurements, and one typical image is shown in Figure S1. The outer radius was about 19 nm.



Figure S1. SEM image of the tip used for nanomechanical measurements.



**Figure S2.** Other examples of line profiles taken under loads of 2nN (a), 5 nN (b), and 10 nN (c) for polyHEMA-2.5 samples.



Figure S3. Other examples of line profiles taken under loads of 2nN (a), 5 nN (b), and 10 nN (c) for polyHEMA-10 samples.



Figure S4. Lateral force images of polyHEMA-2.5 recorded in a different region compared to those reported in the main manuscript



**Figure S5.** Lateral force images of polyHEMA-10 recorded in a different region compared to those reported in the main manuscript