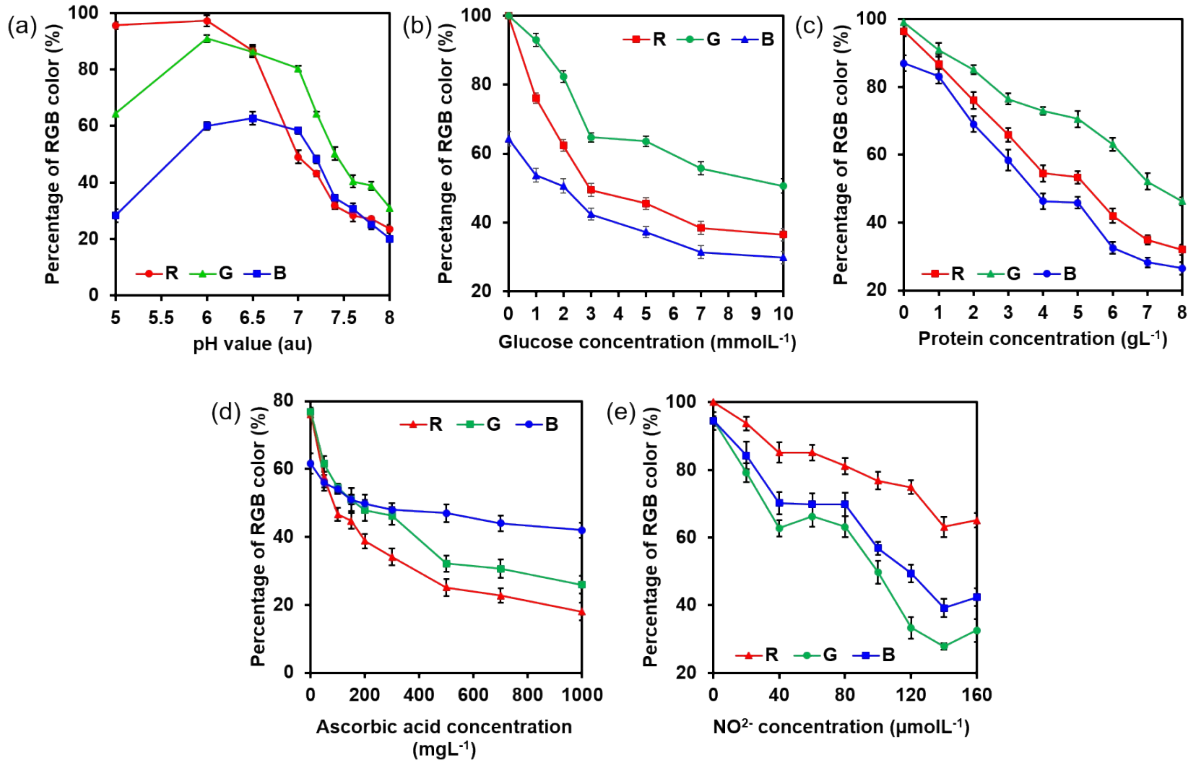
Electronic Supplementary Material (ESI) for Lab on a Chip.

Lab on a Chip
Supplementary Information

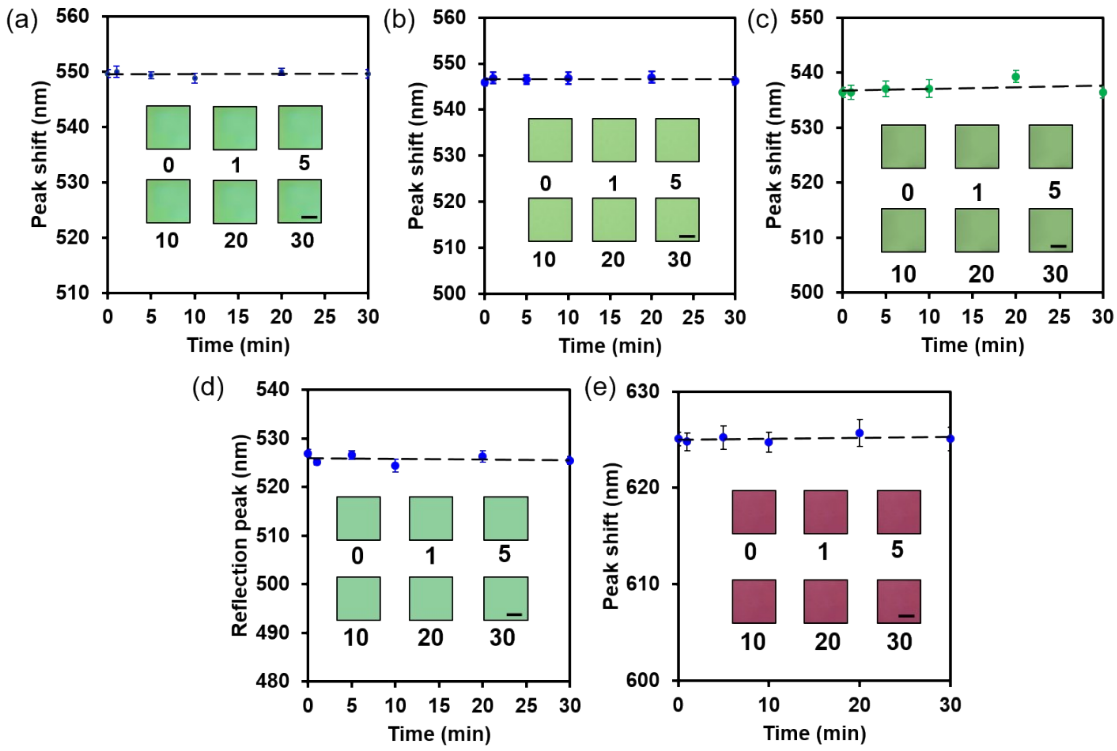
Title: Integration of Paper Microfluidic Sensors into Contact Lenses for Tear Fluid Analysis

Authors: Rosalia Moreddu, Mohamed Elsherif, Hadie Adams, Maria F. Cordeiro, James S. Wolffsohn, Daniele Vigolo, Haider Butt, Jonathan M. Cooper, Ali K. Yetisen

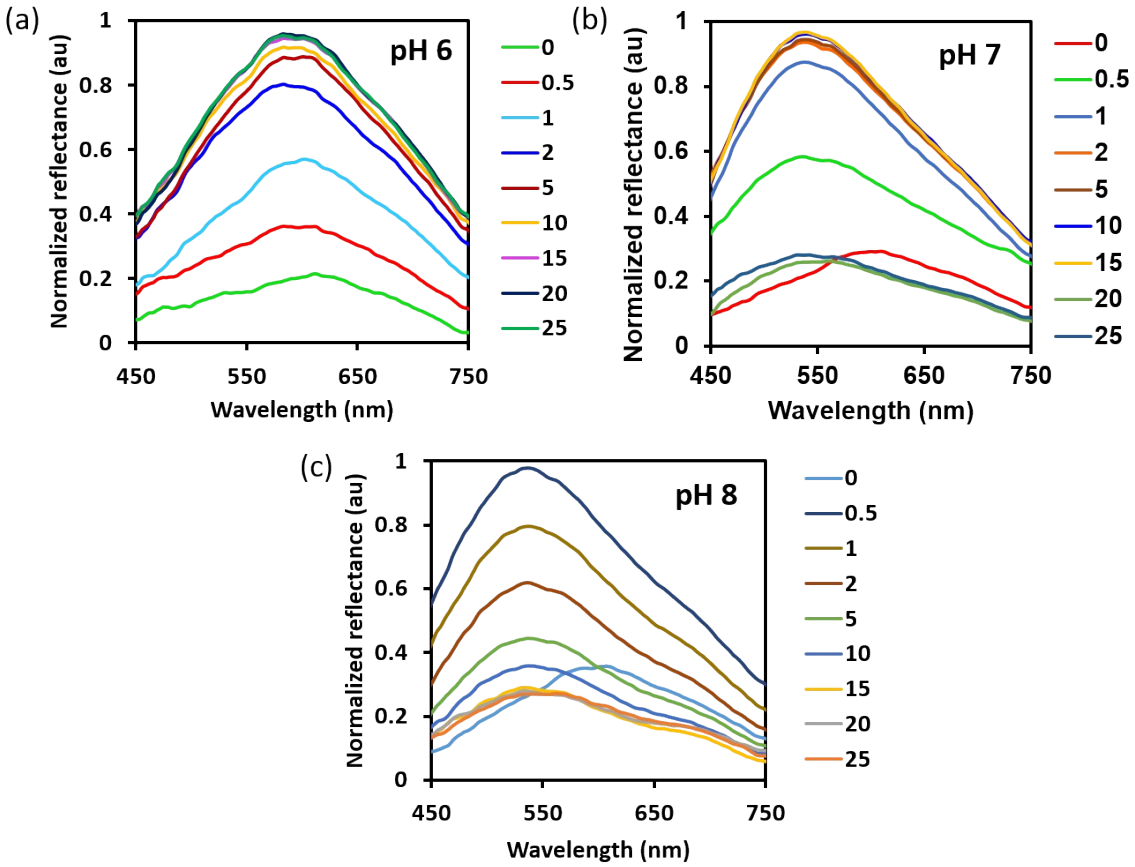


Supplementary figure S1. Percentage of RGB color at different concentration of analytes.

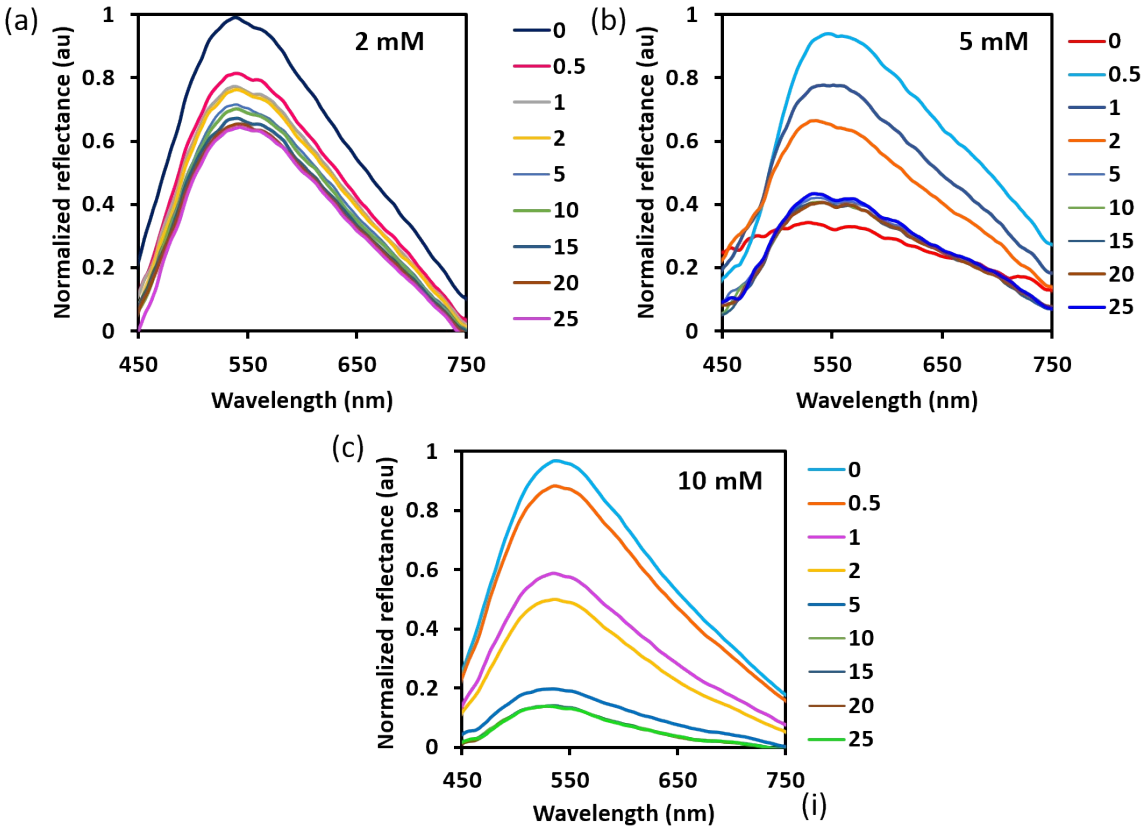
(a) Hydrogen ions; (b) glucose; (c) proteins; (d) ascorbic acid; (e) nitrite ions.



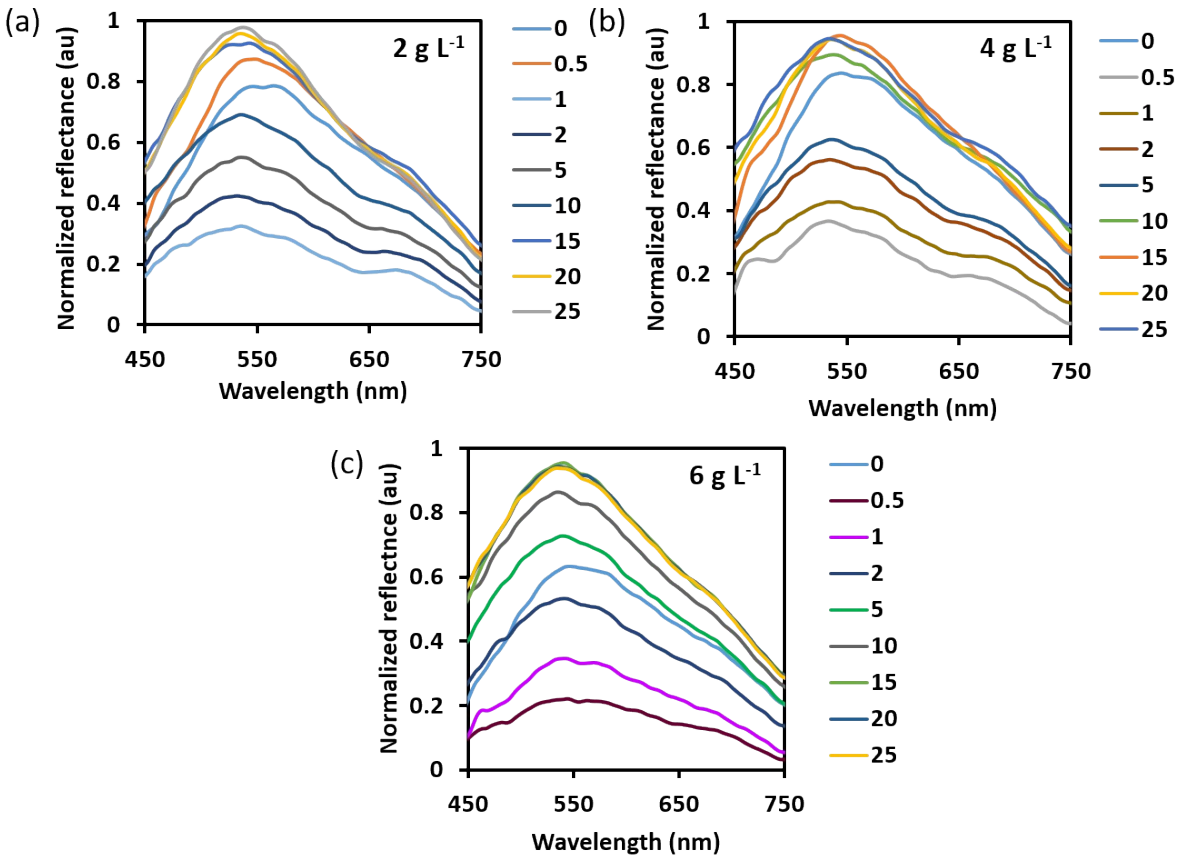
Supplementary figure S2. UV-dependent reflection peak trend when exposing the sensors to UV light at 355 nm for 0, 1, 5, 10, 20 and 30 minutes. (a) pH sensor, (b) glucose sensor), (c) protein sensor, (d) L-ascorbic acid sensor, (e) nitrite sensor.



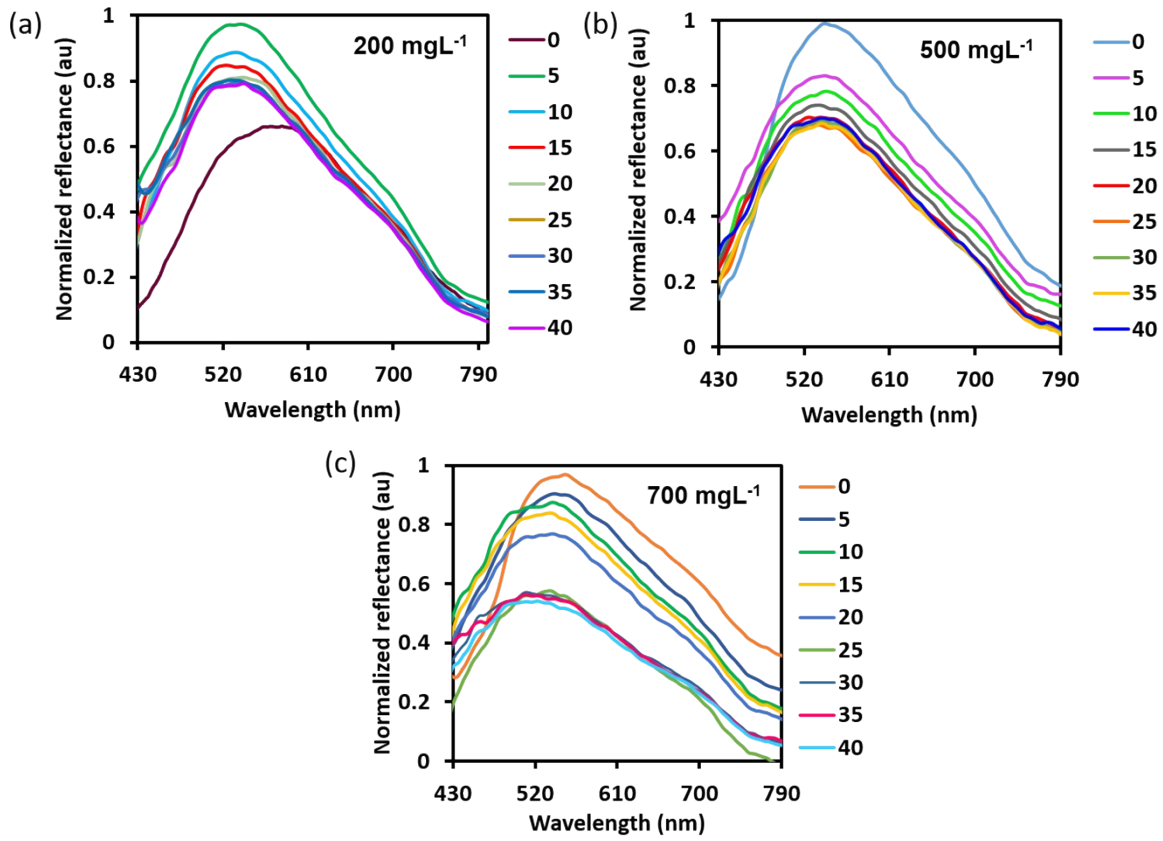
Supplementary figure S3. Reflection peak of the pH sensor over time when exposed to sample tears at different pH. (a) pH 6.0, (b) pH 7.0, pH 8.0.



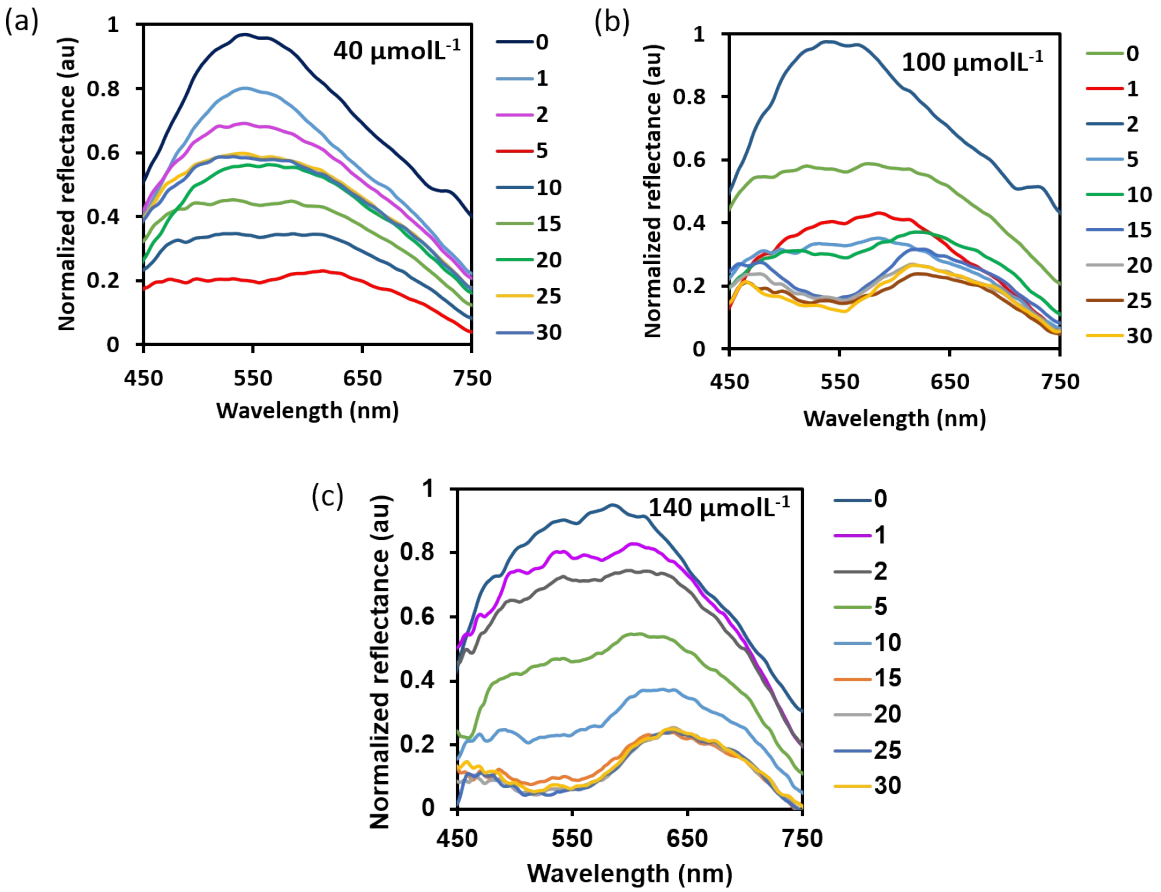
Supplementary figure S4. Reflection peak of the glucose sensor over time when exposed to sample tears at different glucose concentrations. (a) 2 mM, (b) 5 mM, 10 mM.



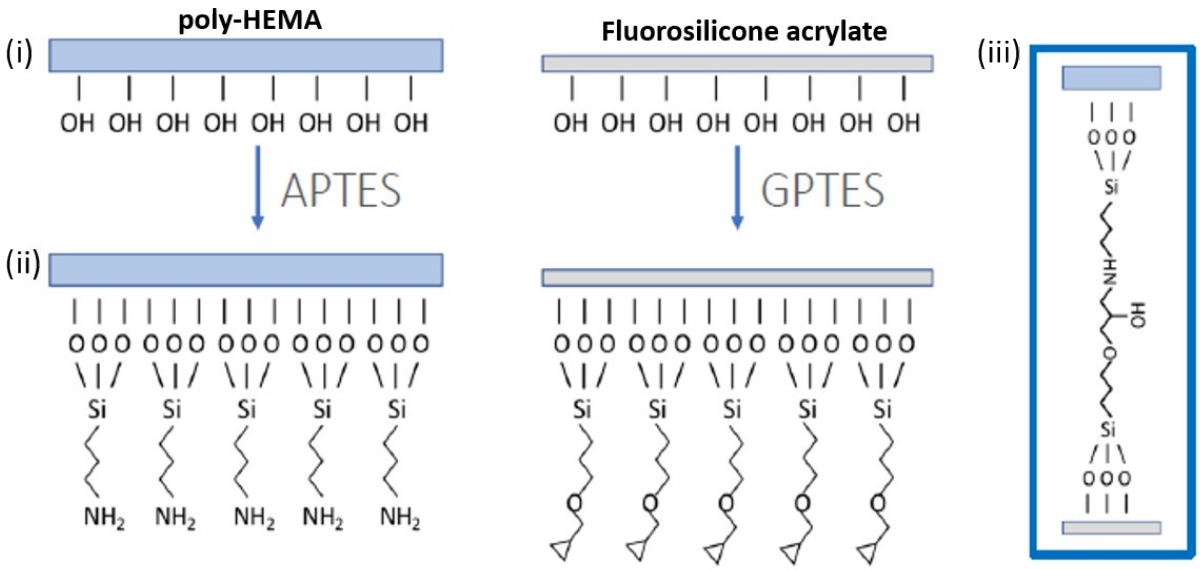
Supplementary figure S5. Reflection peak of the protein sensor over time when exposed to sample tears at different protein concentrations. (a) 2 gL^{-1}, (b) 4 gL^{-1}, (c) 6 gL^{-1}.



Supplementary figure S6. Reflection spectra of the L-ascorbic acid sensor over time when exposed to sample tears at different L-ascorbic acid concentrations. (a) 200 mgL^{-1}, (b) 500 mgL^{-1}, (c) 700 mgL^{-1}.



Supplementary figure S7. Reflection spectra of the nitrite sensor over time when exposed to sample tears at different nitrite concentrations. (a) 40 µM, (b) 100 µM, (c) 140 µM.



Supplementary figure S8. Poly-(HEMA) to acrylate chemical bonding. (i) In a first step, OH groups are obtained on both surfaces by O_2 plasma treatment; (ii) poly-HEMA is soaked in a 1:100 (v/v) APTES aqueous solution, and acrylic is soaked in a 1:100 (v/v) GPTES aqueous solution for 20 min. (iii) Chemical structure of the interface, where an irreversible bonding is formed.