SUPPORTING INFORMATION

3D Printed Contact Lenses

Fahad Alam^{1,*}, Mohamed Elsherif¹, Bader AlQattan¹, Ahmed Salih¹, Sungmun Lee², Ali K. Yetisen³, Seongjun Park^{4,5} and Haider Butt^{1,*}

¹Department of Mechanical Engineering, Khalifa University of Science and Technology, P.O. Box 127788, Abu Dhabi, United Arab Emirates

²Department of Biomedical Engineering, Khalifa University, Abu Dhabi, Po Box 127788, United Arab Emirates

³Department of Chemical Engineering, Imperial College London, London SW7 2AZ

⁴Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon 34141, Republic of Korea

⁵KAIST Institute for Health Science and Technology (KIHST), Korea Advanced Institute of Science and Technology (KAIST), Daejeon 34141, Republic of Korea

*E-mail: <u>Fahad.Alam@ku.ac.ae</u> (F.A.), haider.butt@ku.ac.ae (H.B.). Tel.:+971 2 401 8168

Materials: The chemical composition of the Asiga's Dentaclear resin: The resin is the mixture of following chemical ingredients:

- 1. 7,7,9(or 7,9,9)trimethyl-4,13-dioxo3,14-dioxa-5,12diazahexadecane-1 16diyl bismethacrylate (10-20% concentration),
- 2. Tetrahydrofurfuryl methacrylate (10-25% concentration)
- 3. Diphenyl(2,4,6- trimethylbenzoyl) phosphine oxide (10-20% concentration).

Table SI 1: DLP 3D printing parameters for manufacturing contact lenses.

Printing parameters	Value
Layer thickness	35 microns
Curing time	Burn in layers 80 s, Normal layers 75 s
Speed (Normal layers)	Lifting speed 40 mm/min, lowering speed 80 mm/min
Speed (slow selection layers)	Lifting speed 25 mm/min, lowering speed 40 mm/min
Wait after lift	1 s
Lift after print	6 mm
Support	Diameter; 0.3 mm, height; 4 mm

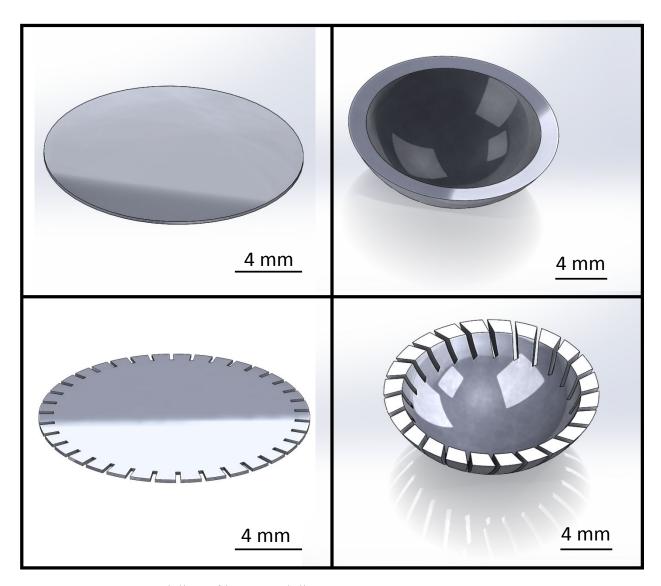


Figure SI 1. CAD modeling of lenses and discs

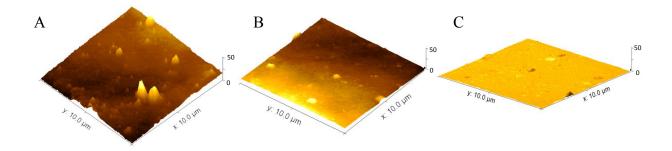


Figure SI 2. 3D surface topography of the discs taken from atomic force microscopy. (A) Sample printed directly on the print bed and no post processing were done. (B) Sample printed on print bed followed by resin coating and (c) sample printed on a PCV thin film attached on print bed.