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## Supplementary Materials for

### 3D printed gradient index glass optics

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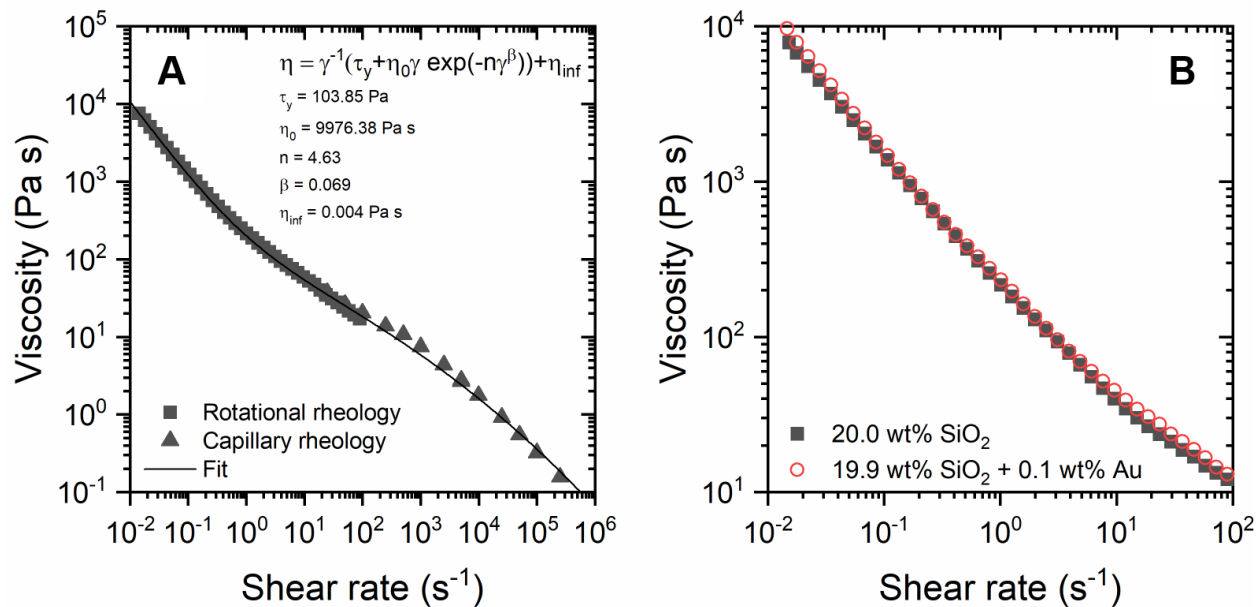
#### The PDF file includes:

Figs. S1 to S5  
Legend for movie S1

#### Other Supplementary Material for this manuscript includes the following:

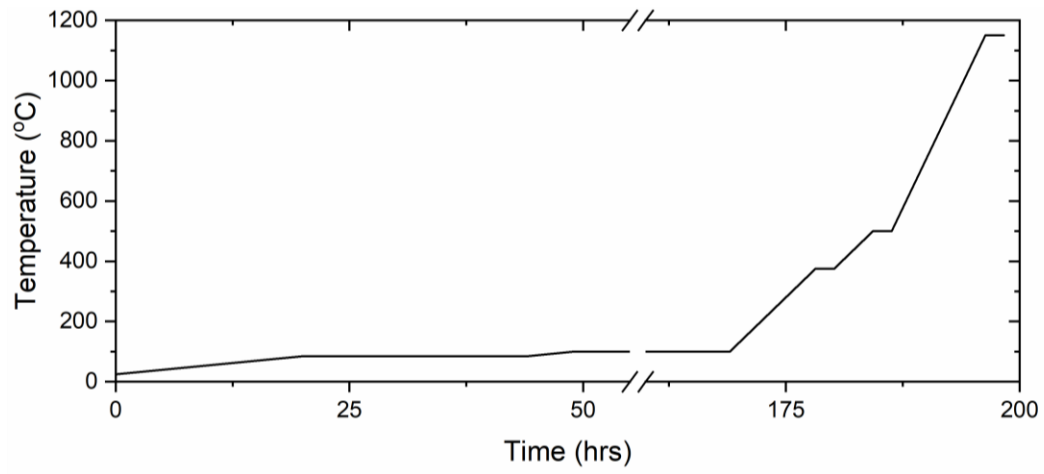
(available at [advances.sciencemag.org/cgi/content/full/6/47/eabc7429/DC1](https://advances.sciencemag.org/cgi/content/full/6/47/eabc7429/DC1))

Movie S1

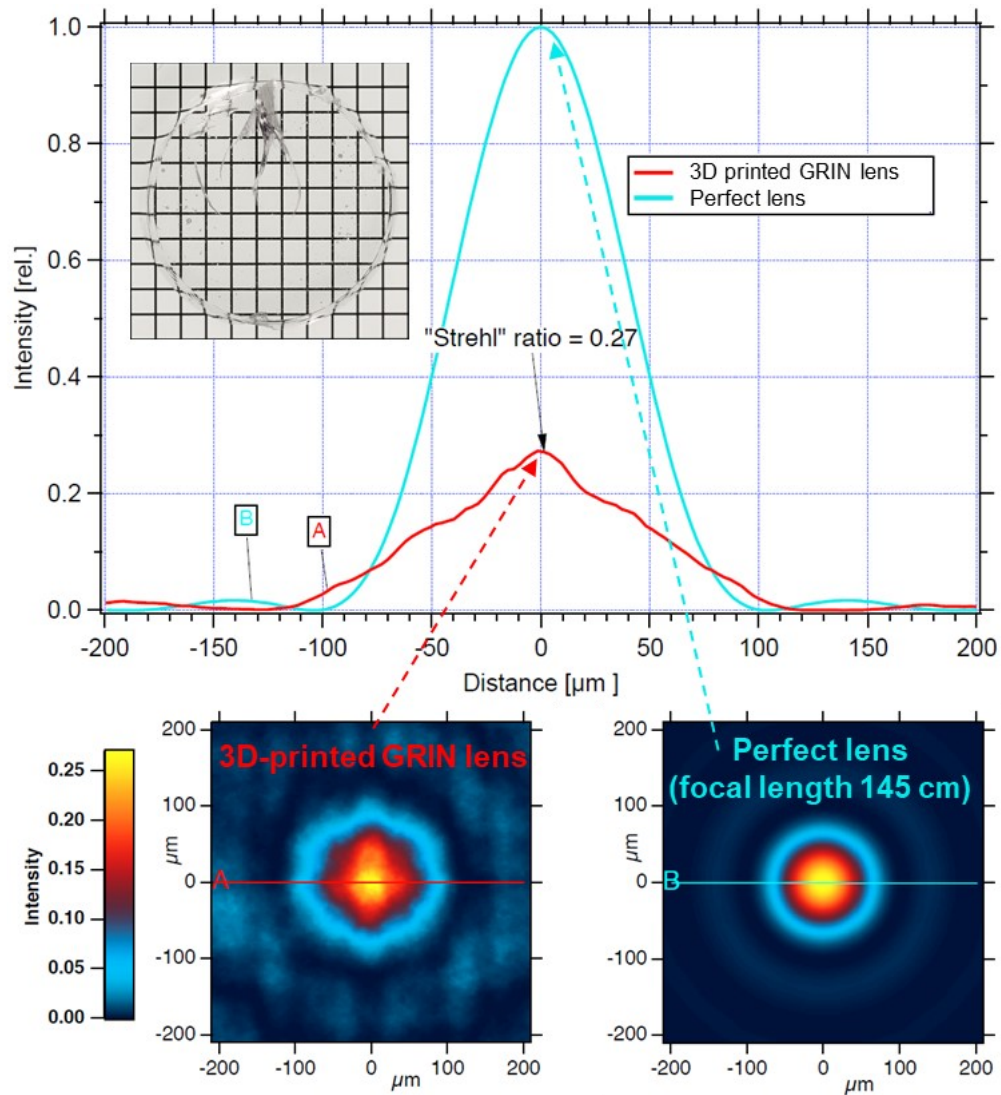


**Fig. S1.**

**Viscosity as a function of shear rate used in CFD simulations. (A)** Viscosity from rotational and capillary rheology of a model ink consisting of 20 wt% EH5 fumed silica in tetraglyme. The fitting equations and corresponding parameters were used to model the viscosity in the mixing simulations. **(B)** The comparison of viscosity profiles for the silica-only ink and ink doped with silica-coated gold nanoparticles shows that there is no change in the rheology.

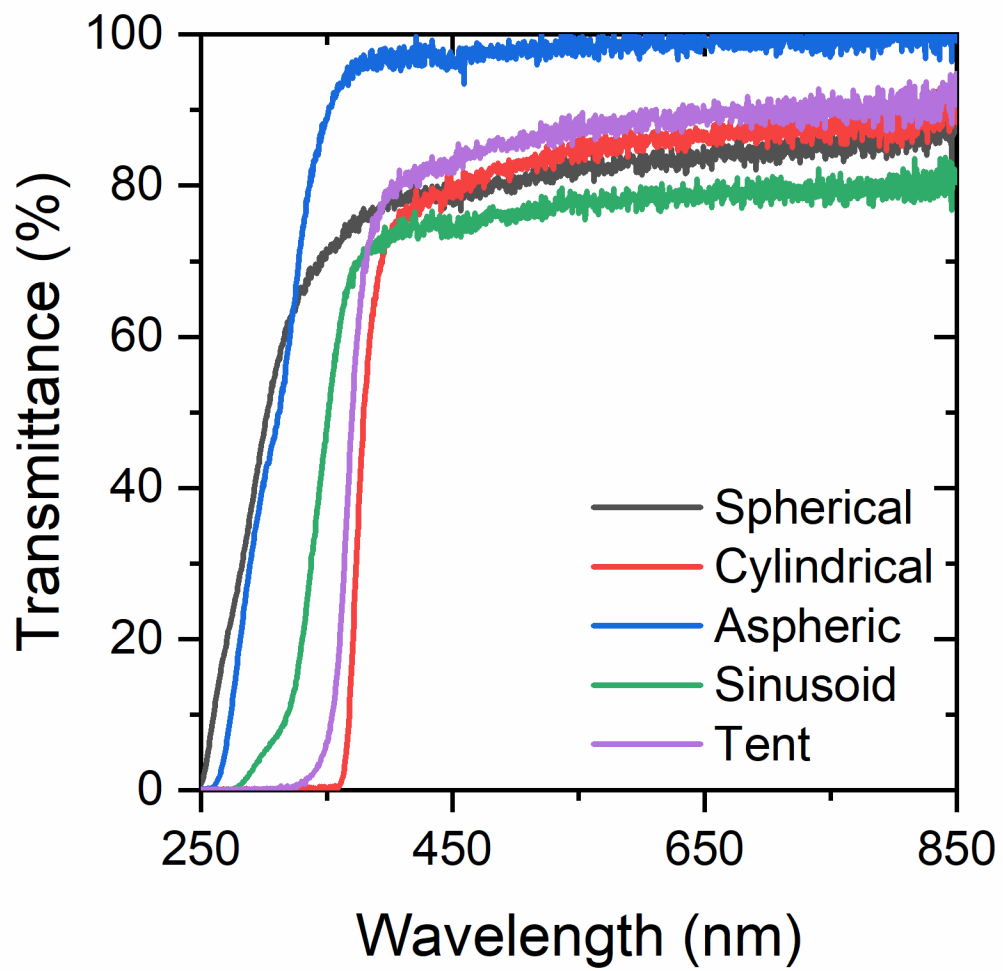


**Fig. S2.**  
**Heat treatment profile used in glass densification.**

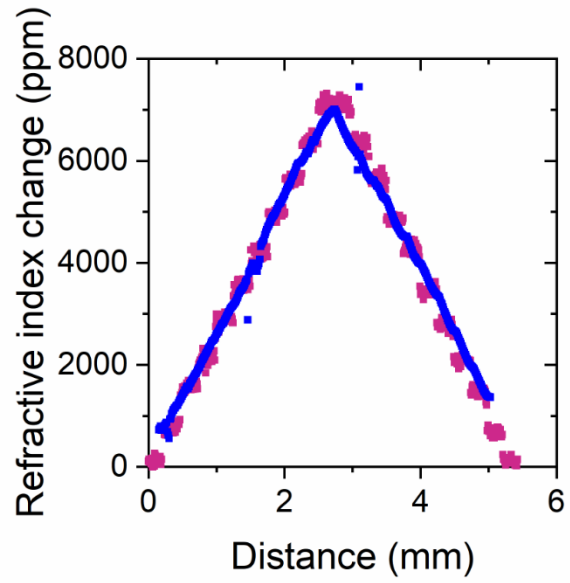
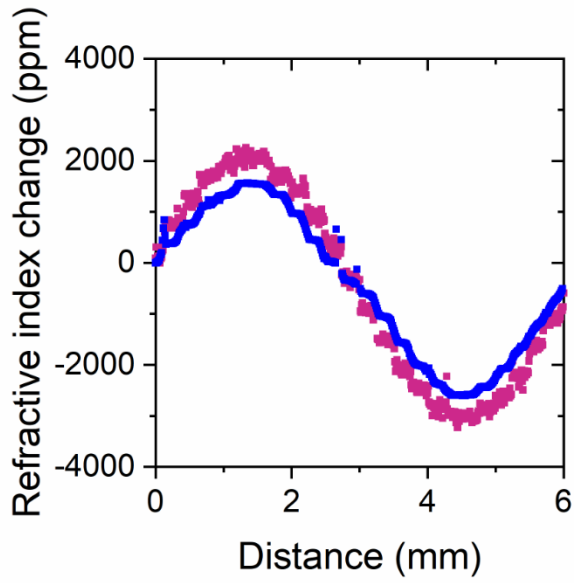
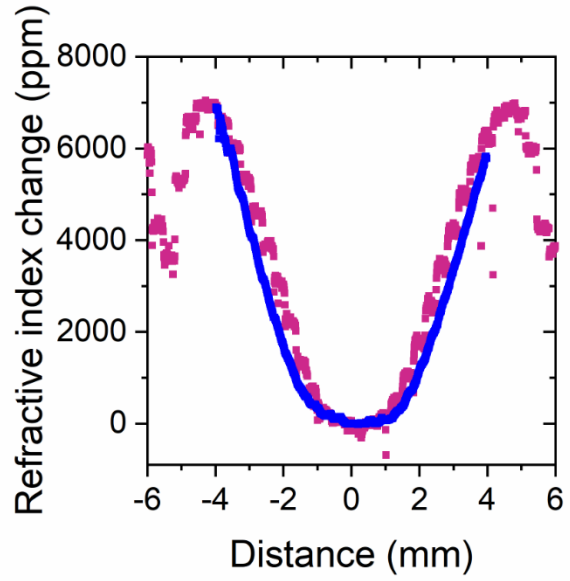
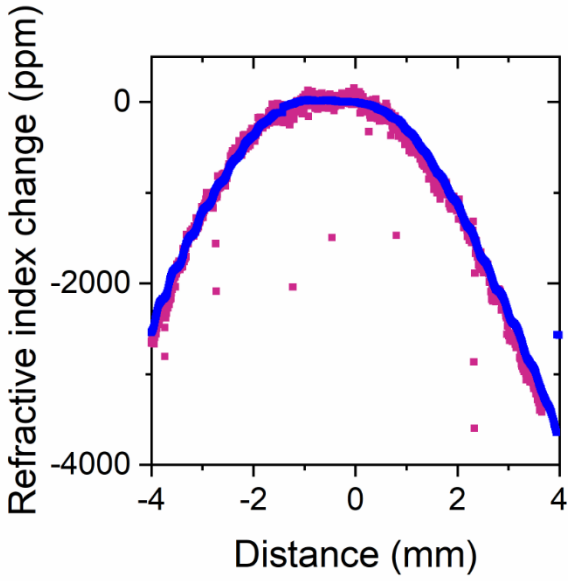


**Fig. S3.**

A Strehl ratio of 0.27 was determined for a 3D printed lens by comparing the relative intensity at the focal spot against a perfect lens that transmits the same total power. *Photo credit: Nikola Dudukovic, Lawrence Livermore National Laboratory.*



**Fig. S4.**  
Measured UV-Vis transmittance of 3D-printed silica-titania glasses.



**Fig. S5.**

Comparison of relative refractive index change of 3D-printed glass (from Figs. 3 and 4) measured optically (blue) and calculated from  $\text{TiO}_2$  concentration (pink) using the linear relationship in Fig. 1C.

**Movie S1.**

**Illustration of the refractive index gradient and lens effect achieved in a flat 3D-printed optic.**