Electronic Supplementary Material (ESI) for Soft Matter.


# Soft thermal nanoimprint with 10 nm feature size

## Supporting Information

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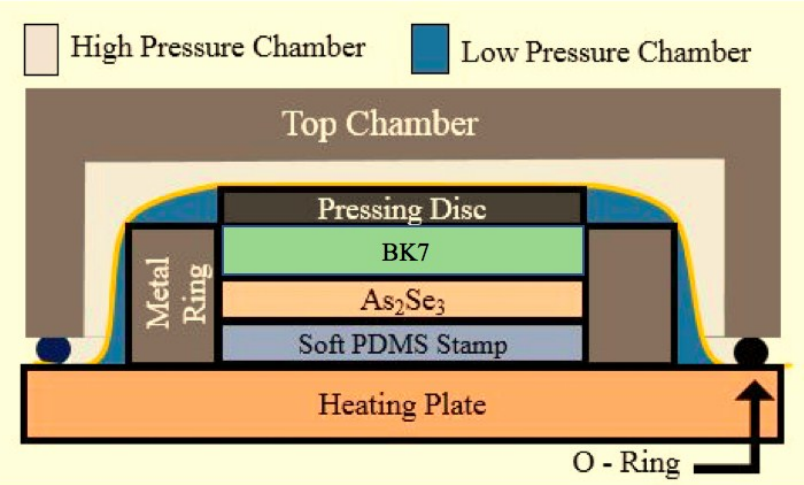


Fig. S1. Setup for direct nanoimprint of chalcogenide glass. Full description of the setup and process can be found in *Yehuda et al*[1].

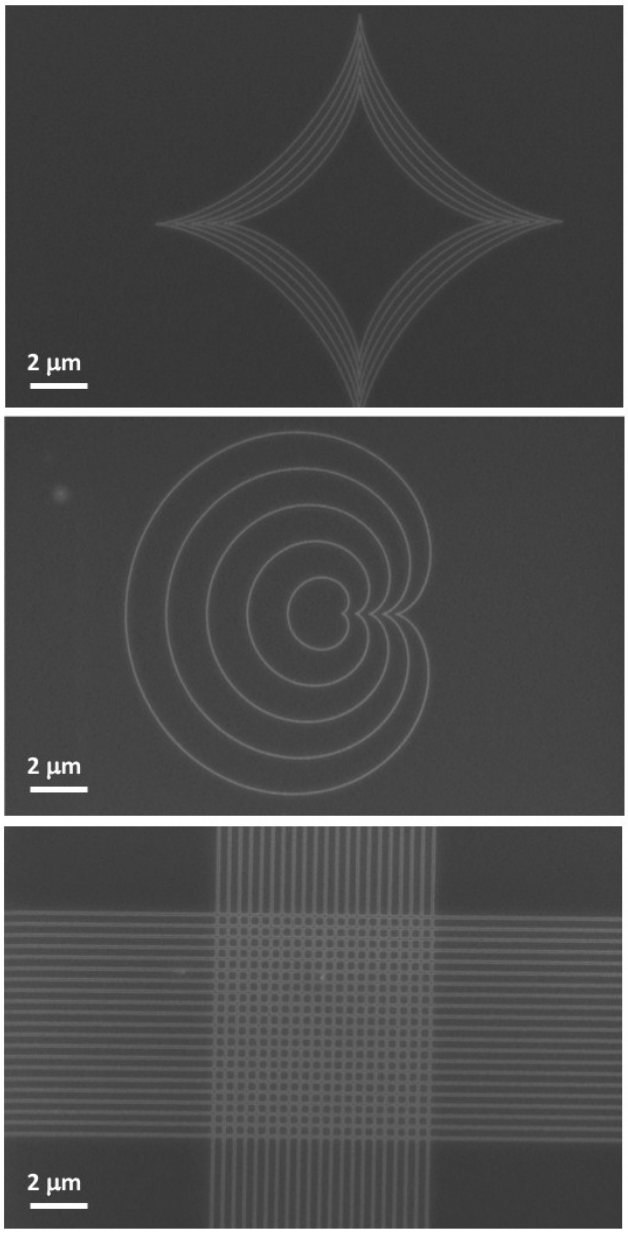


Fig S2. SEM images of the pattern on the master mold

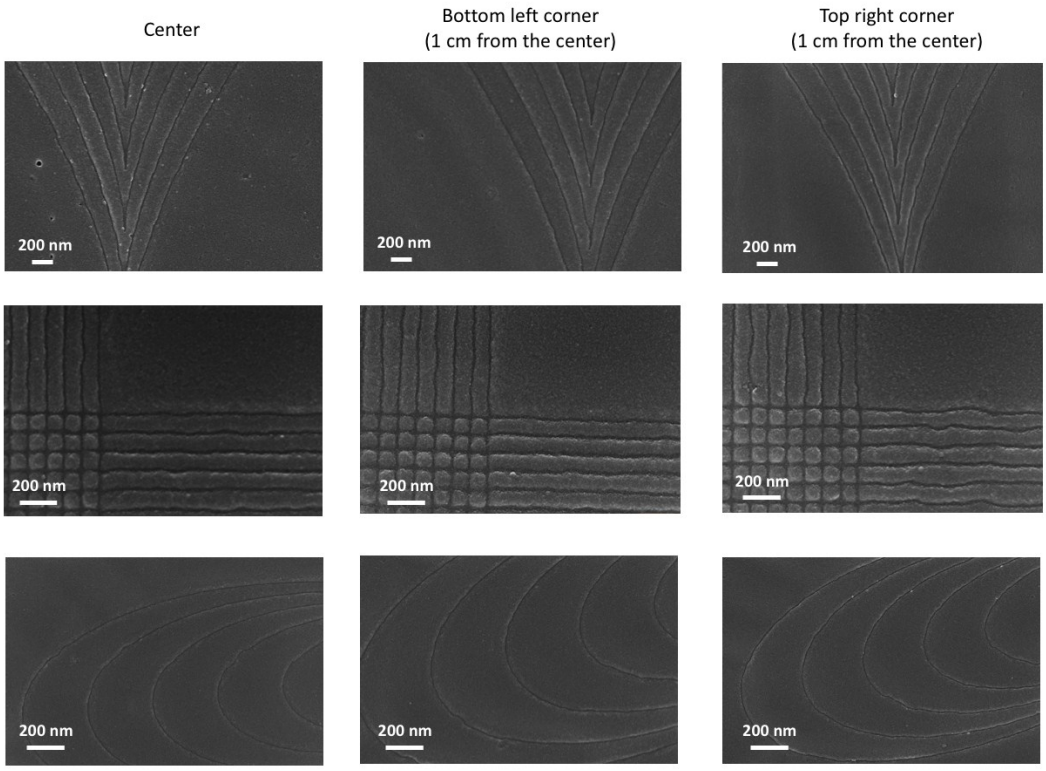


Fig. S3. Uniformity inspection – similar patterns imprinted at different locations on the sample. Remark: the line distortion lines in the 2nd image of top right corner (2nd row 3rd column) is an imaging artifact, which resulted from the charging-induced heating of the polymer resist during the high-magnification SEM. This effect often depends of the pattern type and density, and is not observed in the two other images taken from the same region on the sample and shown in the 3rd column.

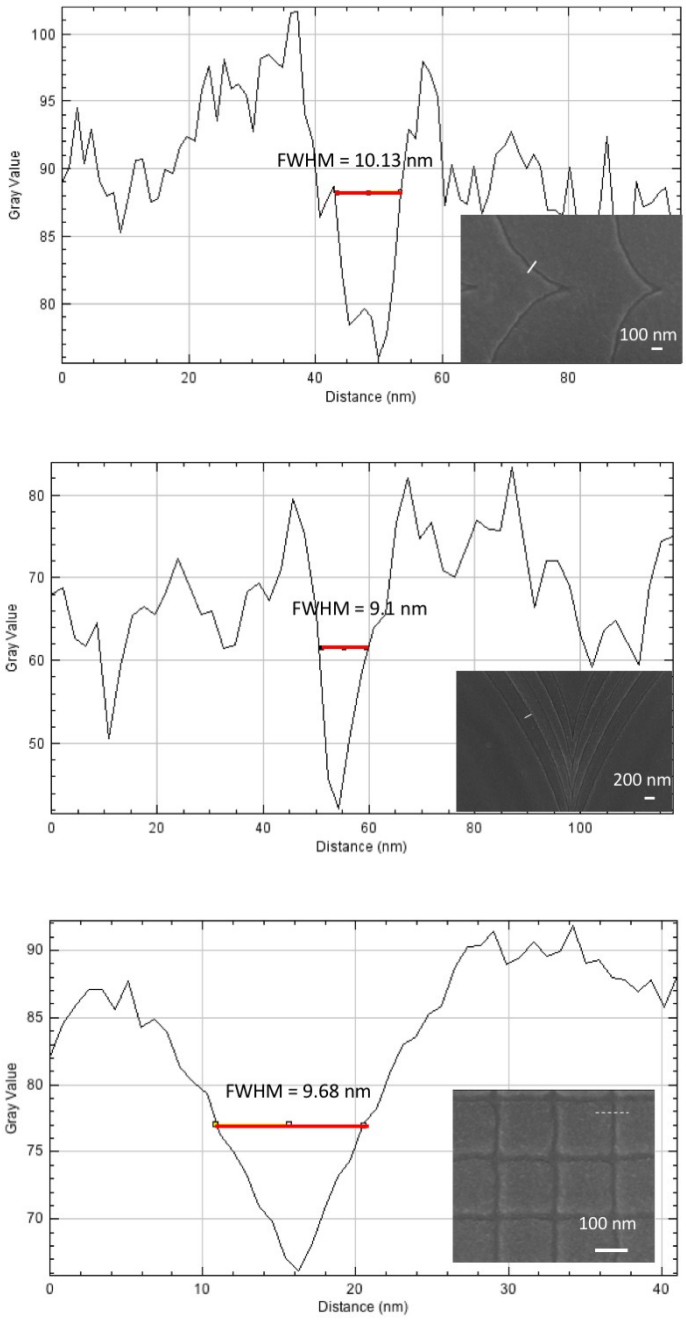


Fig. S4. Full width half maximum of the imprinted lines shown in Fig.1.

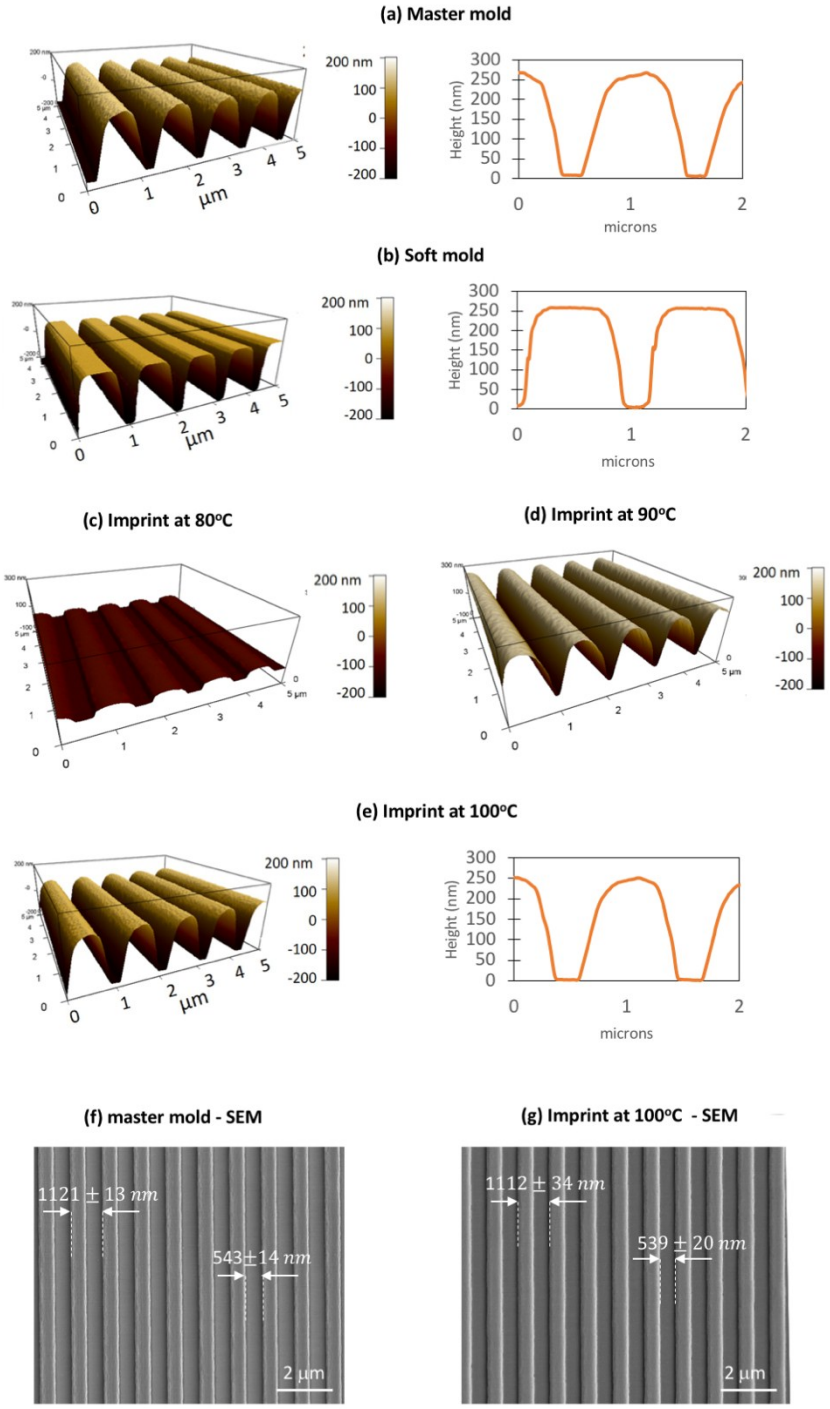


Fig. S5. (a)-(e) AFM images of the master mold, replicated soft mold, and the gratings imprinted at 80°C, 90°C, 100°C, respectively. AFM cross section profiles are shown for the master mold, soft mold, and imprint at 100°C, to demonstrate the exact replication of the pattern vertical dimensions (250 nm in this case). (f) and (g) Top view SEM of the master mold and the resist imprinted at 100 °C. Both the grating period and the trench width were measured at 10 different points in each image, using ImageJ software for the image analysis. The obtained average values are the same (the little negligible differences fall within the measurement error)

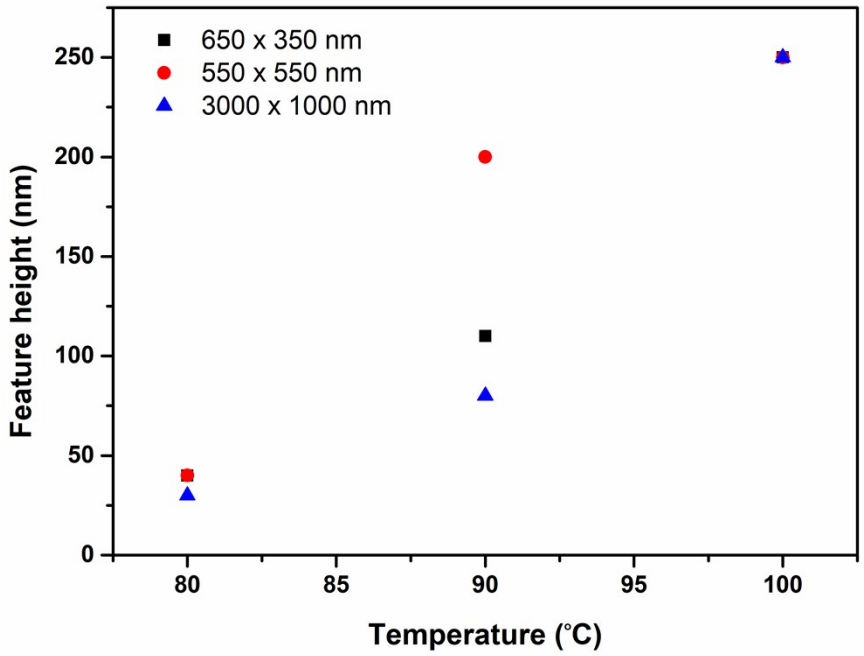


Fig. S6. Height of the imprinted lines as the function of imprint temperature. Three different gratings were examined, as shown in the legends (line width x edge-to-edge spacing). All the original height of the lines on the mods was 250nm for all the tested patterns. The pressure and imprint time were 50 psi and 5 min, respectively.

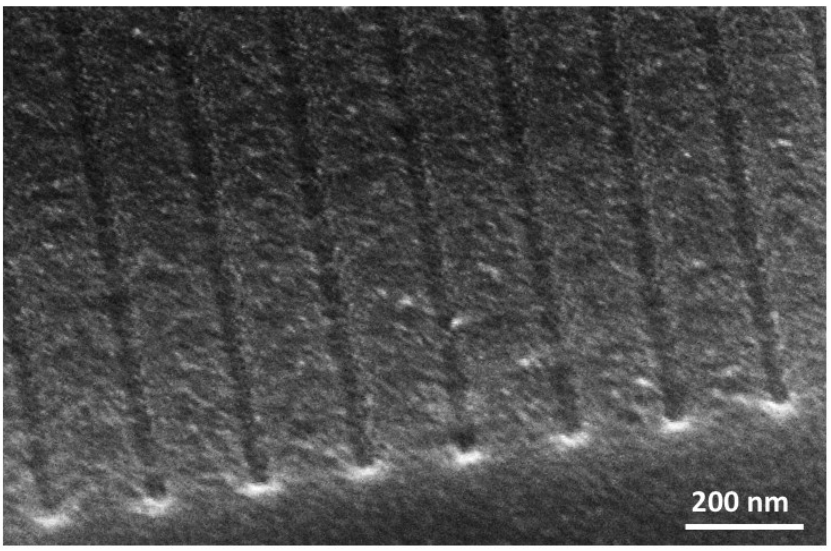

Fig. S7. Tilted SEM mage of the imprinted nanograting, showing that the imprinted depth is approximately the same as the line width.

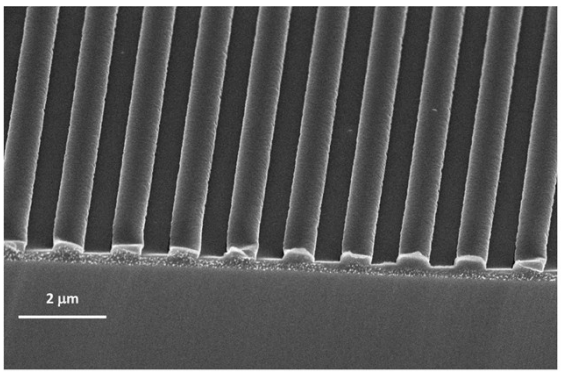


Fig. S8. Cross section of thermally imprinted grating

1. D. Yehuda, E. Kassis, S. Joseph and M. Schvartzman, *J. Vac. Sci. Technol. B*, 2018, **36**, 031602.