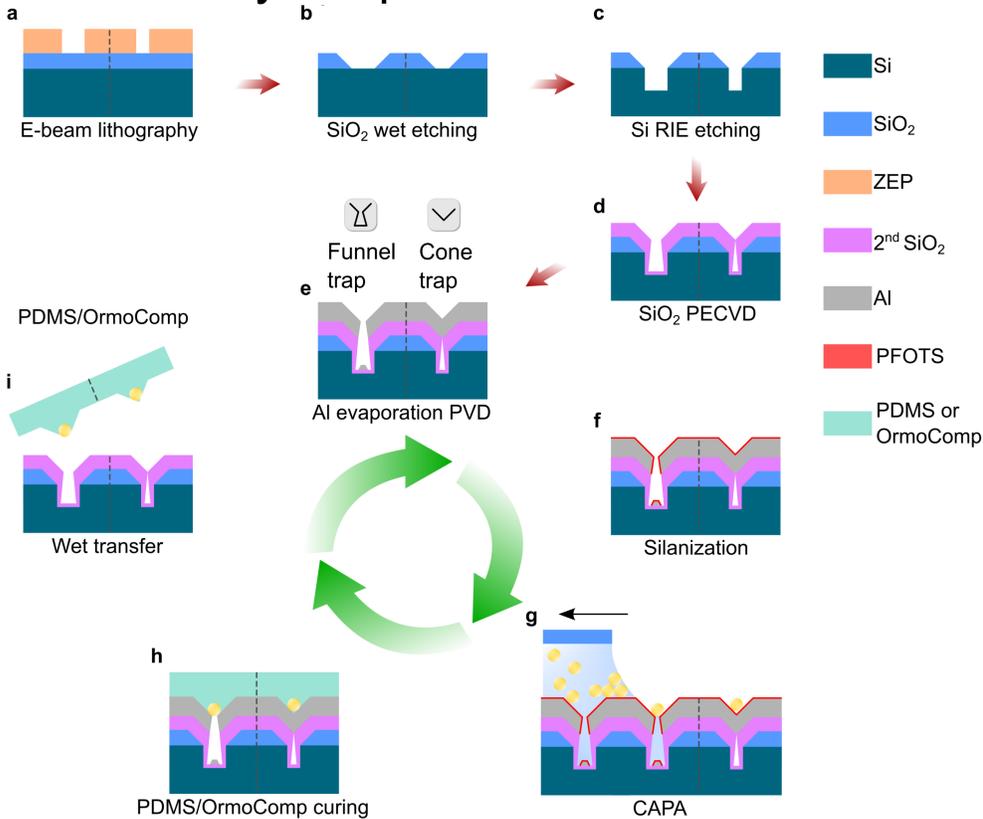


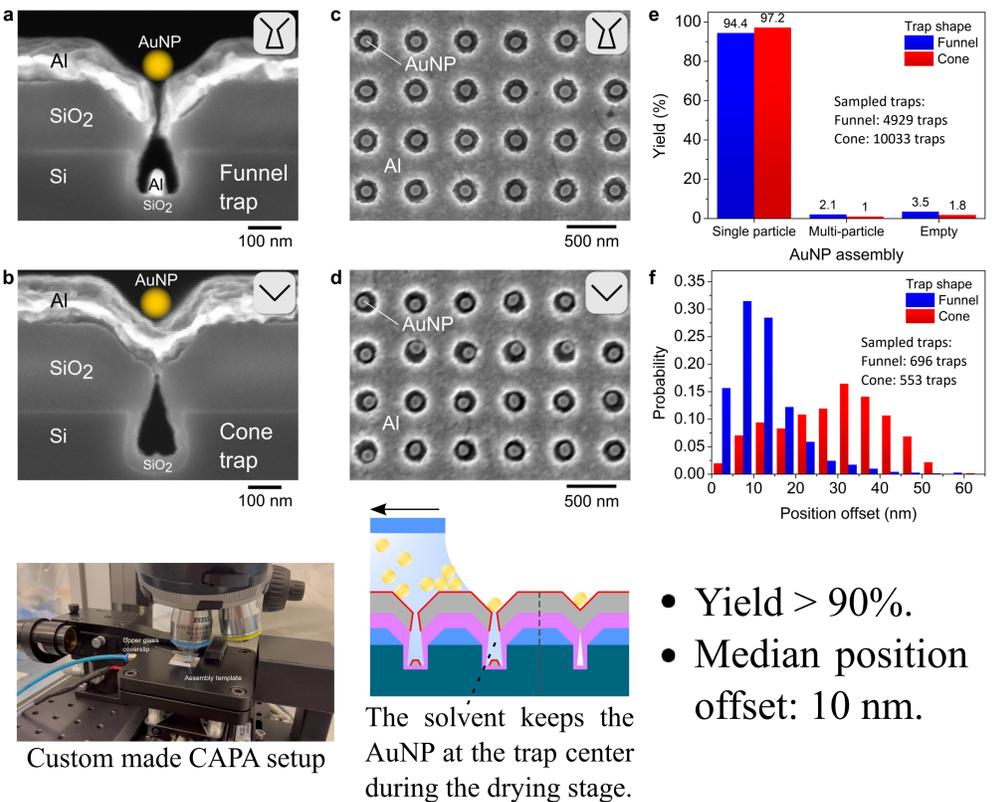
## Summary

We show a scalable process to fabricate reusable silicon templates with funnel- and cone-shaped traps for the capillary-assisted particle assembly (CAPA) technique. The assembly yield of 100 nm AuNPs in funnel traps is as high as 94% and the median of the particle position offset is 10 nm. Assembled AuNPs are then transferred from the silicon template onto other substrates such as PDMS or OrmoComp with a transfer rate > 99%. After the first transfer process, the silicon template is reused leading to a particle position offset comparable to that of the first assembly.

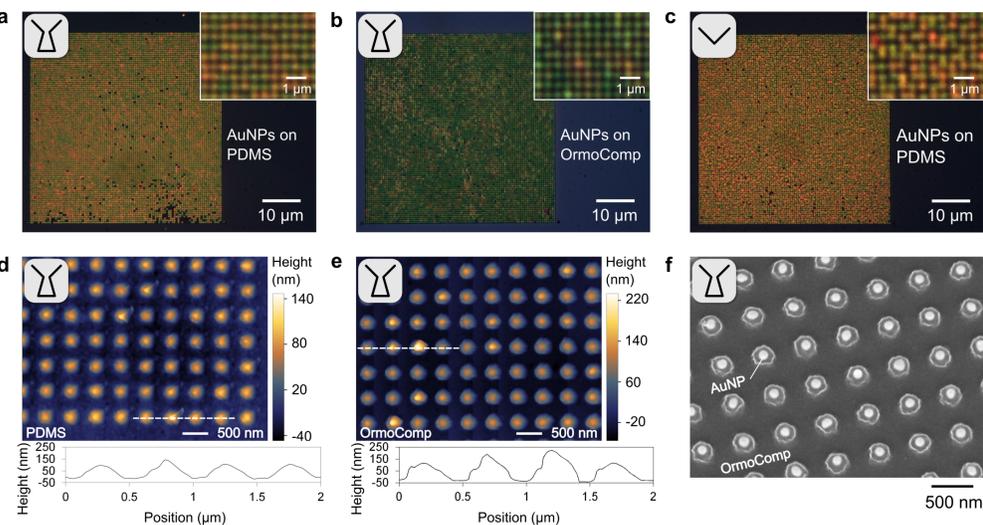
## Assembly template fabrication



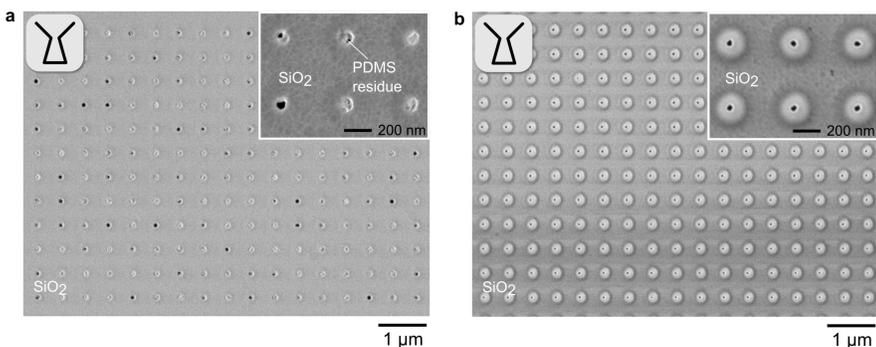
## AuNP capillary assembly



## AuNP transfer

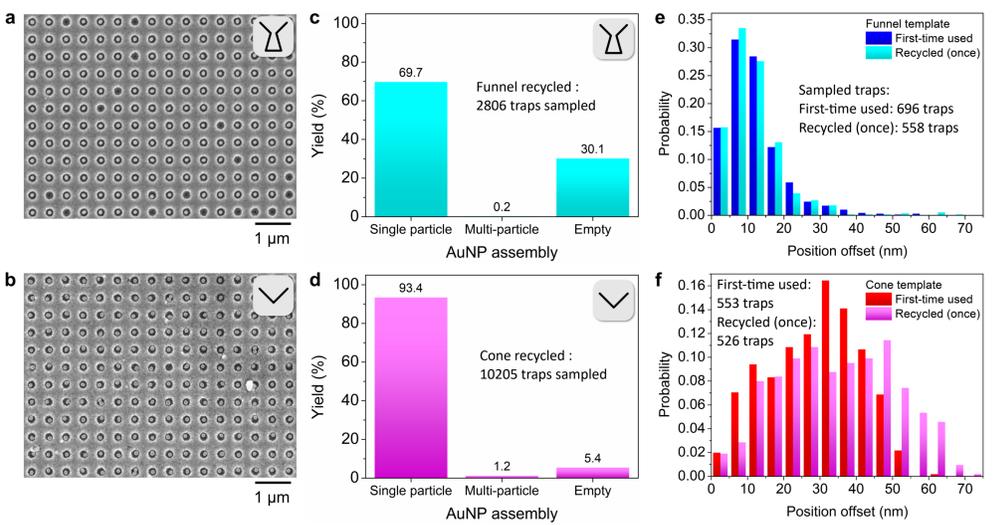


- AuNP transfer yields > 99%.
- The AuNPs remain positioned on the polymer substrate.

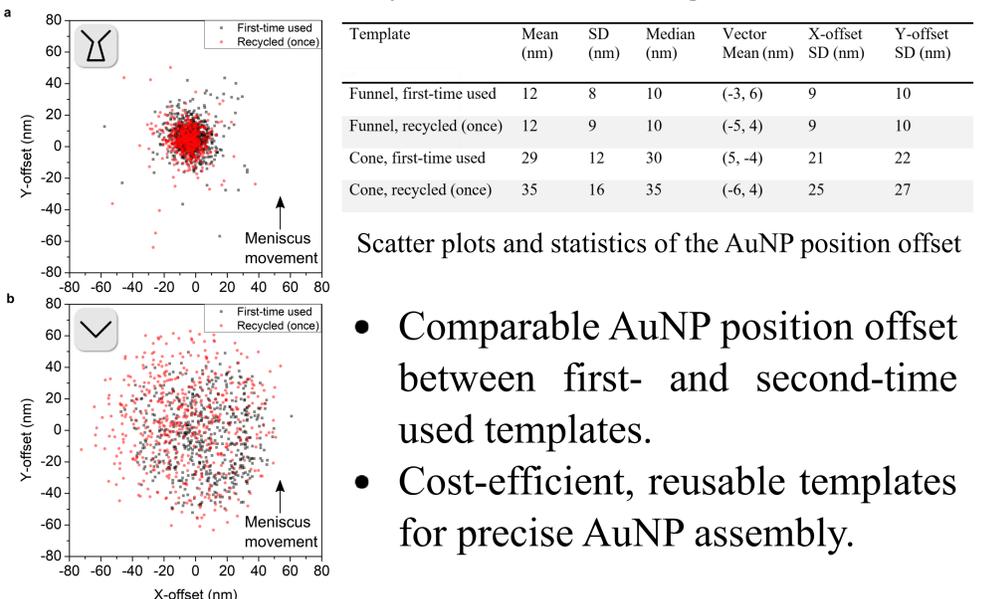


Templates after the transfer process. (a) Without and (b) with PDMS pre-baking (80°C, 7 min) before pouring, no residue observed.

## Assembly template reusability



### AuNP assembly results on the reused templates



## Reference

- [1] V. Flauraud et al., "Nanoscale topographical control of capillary assembly of nanoparticles", Nat. Nanotechnol., vol. 12, no. 1, 73–80, 2016.
- [2] K. Sugano et al., "Fabrication of gold nanoparticle pattern using combination of self-assembly and two-Step transfer", Sensors Mater., vol. 23, no. 5, 263–275, 2011.
- [3] T. Kraus et al., "Nanoparticle printing with single-particle resolution", Nat. Nanotechnol., vol. 2, no. 9, 570–576, 2007.