

Supplementary Information

A novel method for the synthesis of core-shell nanoparticles for functional applications based on the long-term confinement in a radio frequency plasma

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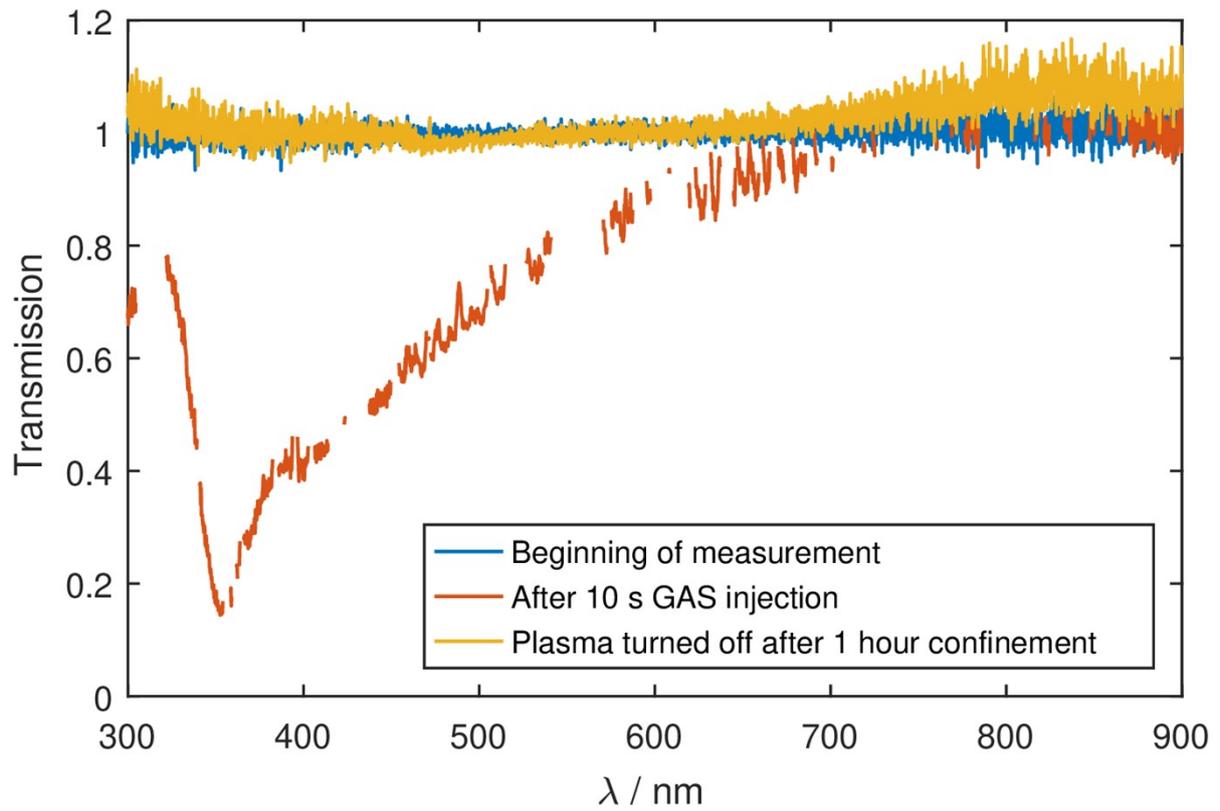


Fig. 1: UV-Vis spectrum of LSPR comparing signal before, during, and after 1 hour of particle confinement. In the spectrum during particle confinement, plasma emission lines have been filtered out. The difference between the first and last spectrum comes from a slight drift of the used light source over time.

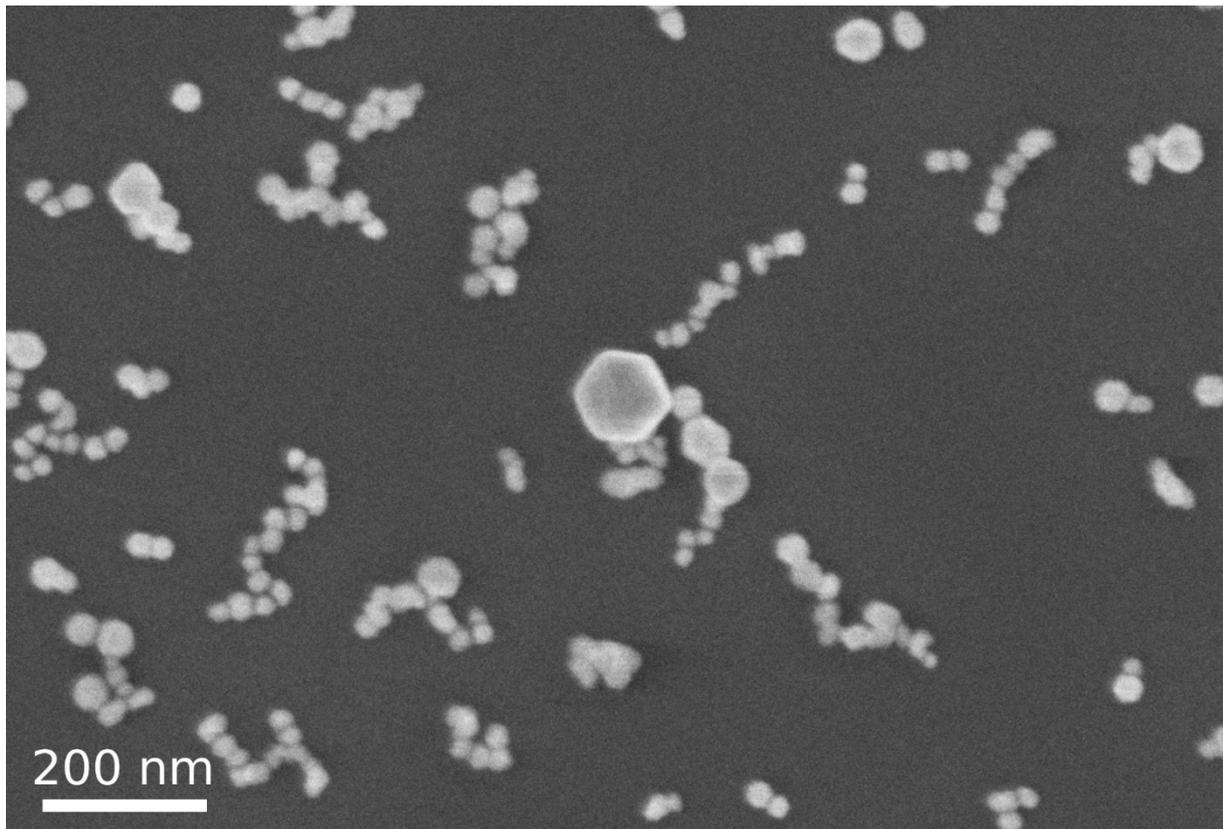


Fig. 2: SEM image of deposited Ag NPs coated for 3 min with SiH_4 . Well visible are agglomerates of NPs. It is unclear if the NPs agglomerate during the synthesis or on the substrate during the extraction.

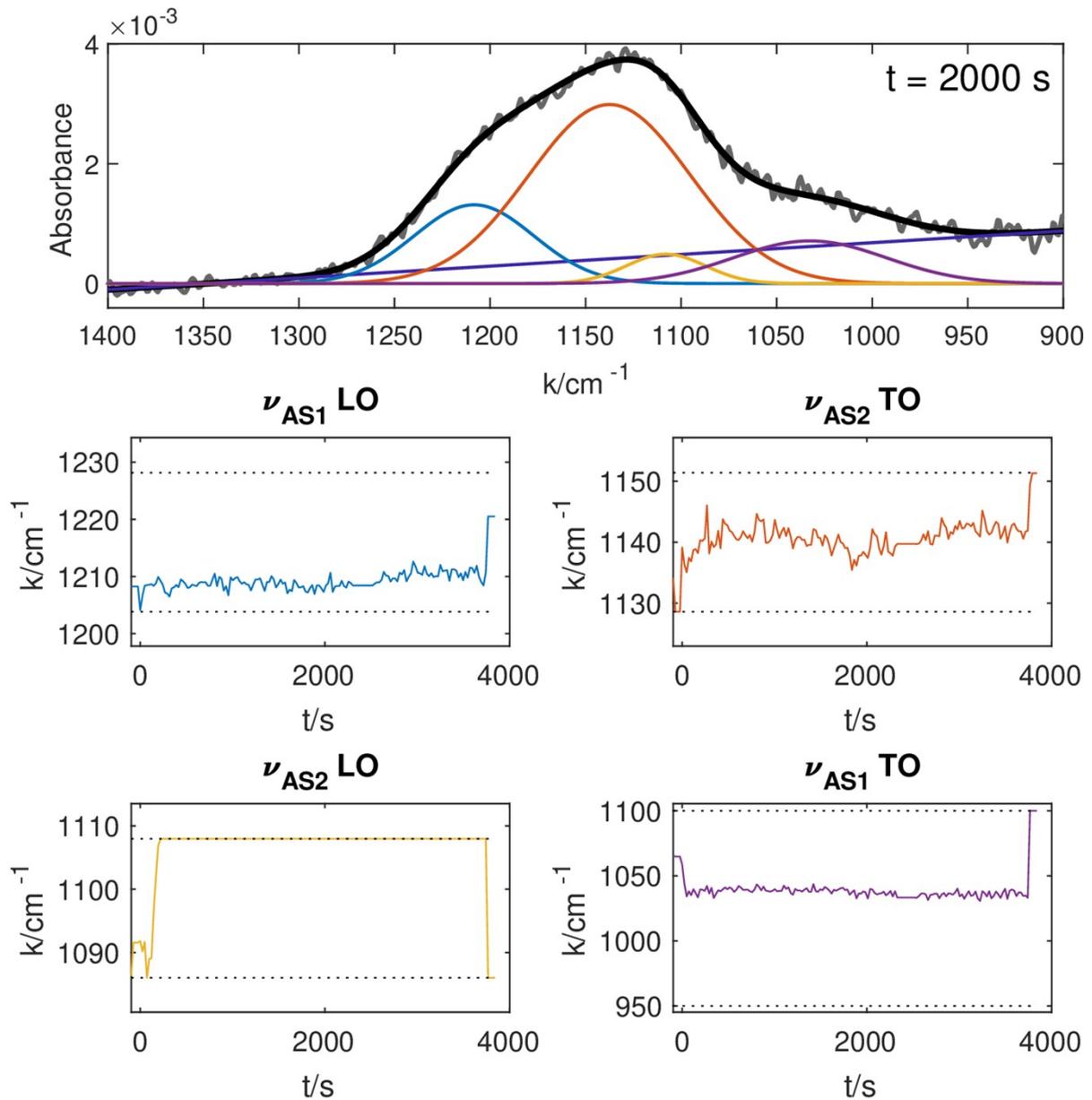


Fig. 3 Top: Decomposition of FTIR spectrum at 2000 s of a long-term confinement measurement into its four constituting vibrational lines. Bottom: Time evolution of fitted peak positions for each line with lower and upper bounds indicated with dotted lines. For ν_{AS2} we were unable to find parameters avoiding reaching the upper bound.

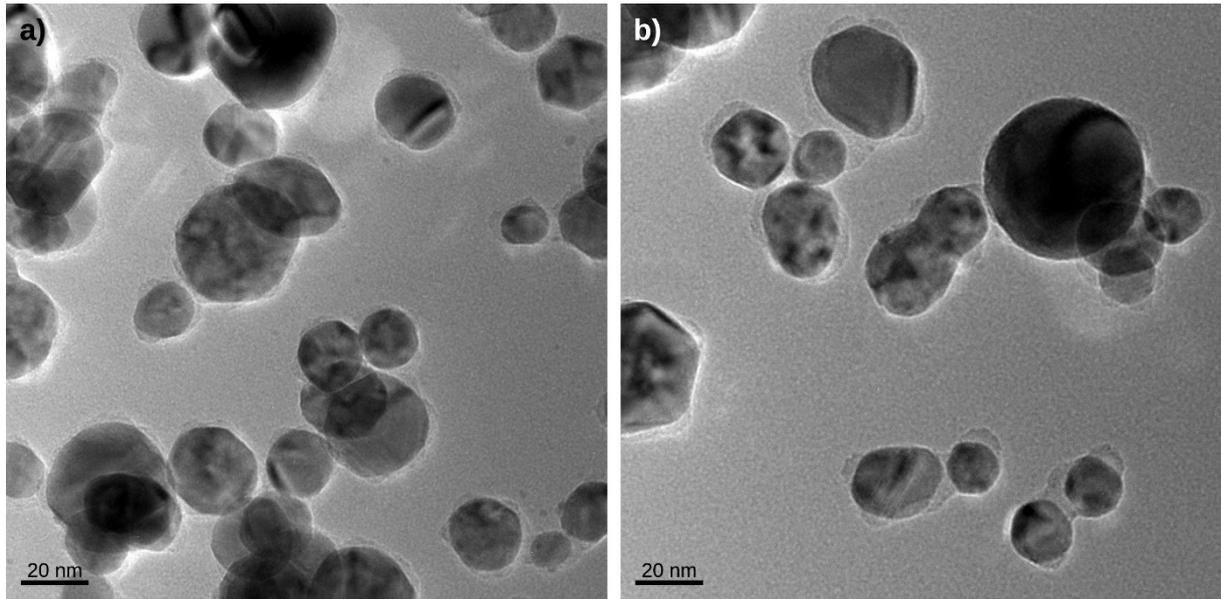


Fig. 4: TEM images of particles after 90 s of silicon coating using SiH_4 . a) Extracted immediately after coating. b) Extracted after an hour of Ar plasma treatment after coating. No significant effect of the plasma treatment can be seen.