

Dispersion of ND-NV single particles individually over glass using spin coating

Quite often nanodiamond particles containing NV centers (ND-NV) need to be dispersed over glass for characterization or application purposes. Below is a tentative procedure developed by our collaborators from academia to disperse ND-NV single particles individually over glass using spin coating. NDs terminated with carboxylic groups provide a reasonable adherence to glass substrate. The procedure includes use of polyvinyl alcohol (PVA) for better adherence.

The recommended procedure is as follows:

- For spin-coating use concentrations of ND-NV $\sim 0.01\text{-}0.05$ mg/ml (in the final-solution the concentration will be only 50% of that because of the PVA-solution)
- Prepare the PVA-solution 0.3% (w/w)
- Mix 15 μl of diamond-solution and 15 μl of PVA-solution (vortex and sonicate for 10 min in a bath)
- Use spin rate 3000 rpm for 20s (not very critical)
- Make sure your glass slides are clean (a "plasma-cleaner" can be used)
- If the slide is plasma-cleaned, 30 μl is enough to cover the whole slide (e.g. 22x22 mm)