

Experiments till Pesah

Lakeshore

- Photo-Diode measurements of light intensity: Wednesday
- Saturation test with alumina: Wednesday
- further steps depending on outcome

Nano Particles

- synthesis from cyclohexanone as solvent: 6th to 10th of April
- finding deposition conditions: 6th to 10th of April
- poling: 6th to 10th of April

Cyclohexanone is a better solvent for the polymer than acetone which is used throughout the literature. I should be able to synthesise NPs in higher concentration. Their quality and size might also be improved, because the cyclohexanone/H₂O+MeOH interface is much more stable than acetone/H₂O+MeOH. This is a new procedure and might improve the synthesis compared to what is known in the literature.

I will check the quality and size distribution of the NPs by SEM and will use the chance to get permission from Asaf to work there on my own. I will also pursue Dynamic Light Scattering measurements with the Physics/Optics groups. I will use GATIR to check the crystal-phase. To deposit NPs on Si, I will set up a ‘nitrogen-tent’, so the solution can evenly evaporate at room-temperature or slightly above without too much O₂ exposure. Spin-casting is not an option because of wetting, but draw-casting or mechanical pressure might work.

Once I have a film, I can check (unpoled) CPD & SPV. I will try to pole in high-field, without touching the surface. If that doesn’t work, I’ll try intimate-contact poling and compare CPD & SPV.

Polymer Layer

- retry poling without PDOT:PSS: 13th & 14th of April
- poling with PDOT:PSS: 15th & 16th of April

I want to retry poling without PDOT one last time, using 80°C as poling temperature, in the glovebox. This temperature should not change the crystalline phase of the polymer and enhance alignment with the external field at the same time. If this doesn’t work, I will deposit PDOT:PSS on top of the polymer layer and try to apply the field directly through the PDOT top-layer.