# PETER Status meeting – Minutes

## 21. 5. 2021 14:00

Attending: Božena Čechalová, Tomáš Šikola, Lorenzo Tesi, Martin Konečný, Petr Neugebauer, Rainer Hillenbrand, Monika Larruskain, Joris van Slageren, Martin Hrtoň, Jiří Liška, Alisa Leavesley

**Agenda:**

1. Project management and admin – BUT

2. Presentations/Publications - USTUTT/all

3. Progress in PE EPR spectroscopy experiments/simulations – USTUTT/BUT

4. Present state on testing of AFM in Stuttgart – USTUTT (no presentation, just a comment?)

5. Present state in fabrication of probes – BUT/NanoGune

6. Samples for PE EPR spectroscopy and microscopy – BUT

7. Signal modulation issue – TK/USTUTT

### 1. Project management and admin

1. **Reporting – due deliverables**

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| **Number** | **Title** | **Description** |
| D2.7 | Applications of PE EPR | Report on applications – room temperature: feromagnetic nano/microstructures fabricated by EBL and FIB, a commercial hard disk. Low temperature: molecular nanomagnets (transition metal-phthalocyanine thin films on various substrates) |
| D3.8 | Final CDE plan | Overview of CDE activities, plan for after-project period |
| D3.9 | Scientific communication | Summary of the scientific communication containing at least 10 papers in impacted journals, at least 8 conference presentations during the duration of the project. |
| D3.10 | Open Research Data Pilot | Implementation of Open research data pilot in the project. |

USTUTT will prepare the report on PE EPR experiments D2.7, Brno will assist in the part on sample preparation – J. Liška, J. Čechal)

BUT will prepare the WP3 deliverables (questionnaire on dissemination will be sent out next week)

1. **Future collaboration, projects**

* The consortium has been encouraged by the new project officer to (re)submit the project proposal within the Innovation Launchpad project scheme.
* It has been agreed that the individual project partners have a freedom to apply independently for project grants at the national or international level in the field of the PE EPR.
* TK has an interest to bring spectroscopic mode of PE EPR to higher TRL
* Rainer Hillenbrand expressed the idea that NeaSpec might be interested in microscopic mode of PE THz EPR in the future. He does not want to be the main “driving force” in this EPR microscopic business but is ready to act as an advisor/consultant. Tomáš Šikola added that an interest of NenoVision to work in this field should be known as well.

### 2. Presentations/Publications

Waiting for the decision on the paper manuscript. Lorenzo Tesi has applied for oral contribution at the International Conference on Molecular Magnetism (ICMM) 2021. Other publications/ presentations welcome.

### 3. Progress in PE EPR spectroscopy experiments/simulations – USTUTT/BUT

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1. Test of EPR in the PETER setup - different samples tested:

Mn12, TEMPOL: good signal, NV centers: old setup (HF EPR) has higher signal than the new one, NiFe: no signal (too low modulation?, unstable modulation coil?, too low source power?).

1. PE EPR microscopy:

Possible signal reference by retracting the AFM tip – will be tested

Collaboration: Rainer is ready to assist in experiments remotely via internet, Alisa plans to come to Stuttgart between 6th – 12th June (re-adjustment of the quasi optics, ……)

1. PE EPR simulation – Martin Hrtoň

Work on explanation of strong signal enhancement as a function of small antenna separations (≈ 5 microns) previously observed by Lorenzo. Martin has made simulations for larger arrays of closely packed antennas. The results will be discussed in detail.

### 5. Present state in fabrication of probes

5 probes from CEITEC arrived to NanoGune, 5 additional ones have been just fabricated at CEITEC and will be sent to NanoGune soon. In the 1st half of June some probes should be prepared yet.

### 6. Samples for PE EPR spectroscopy and microscopy

NiFe samples sent to Stuttgart; Cu phtalocyanines samples fabricated, height: 70 nm, roughness: 10 – 150 nm, Raman spectra: nice peaks, 2 samples ready for sending to Stuttgart.

### 7. Signal modulation issue

Modulation coils under way, demodulation: 2nd lock-in amplifier needed (should be fixed).

Attached: Presentations by J. Liška and L. Tesi

**Next meeting: 10. June, 14:00**