



SPM2.0

The newsletter of the Marie Curie Skłodowska
European Training Network SPM2.0

SPM2.0 Recent Highlights

3rd Network Meeting, Linz (AUSTRIA), 31st January 2019 Interim Meeting (24 months) – with the Project Officer and EC

The SPM2.0 team got together at JKU facilities in the beautiful Austrian town of Linz the 31st January 2019. The main purpose of the meeting was to review the progress evolution of the project and to meet the whole SPM2.0 family composed of the Early Stage Researchers (ESR), Principal Investigators and Supervisors, and Project Management.

The coordinator presented an overview of the project and project evolution, including general info, recruitment, training, boards, financial reporting, secondments, dissemination and communication actions, assessment commissions, deliverables and milestones alignment and next meetings and doubts. Then, each beneficiary PI presented a short overview of their overall contribution to the project.

Finally, the 1st February 2020 the project Interim Meeting was done together with the Project Officer to evaluate the first 24 months of the project implementation. The consortium presented the corresponding report, including the scientific, training, networking, and management aspects. Moreover, each ESR fellows presented her/his work and future plans. The overall meeting was very well obtaining a positive evaluation with minor actions to be done. It is worth to mention how the meeting was considered a very good experience for the students to know how a project works from the inside.



SPM2.0 intends to...

SPM2.0 aims to consolidate Europe as the world leader in Scanning Probe Microscopy technologies and its emerging applications in key sectors like materials, microelectronics, biology and medicine.

The researchers of the network will acquire a solid state-of-the-art multidisciplinary scientific training in this field of research, covering from basic science to industrial applications, which should enable them to generate new scientific knowledge of the highest impact. In addition, they will receive a practical training on transferable skills in order to increase their employability perspectives and to qualify them to access to responsibility job positions in the private and public sectors.



Training Workshop 3, Linz (AUSTRIA), 28th-31st January 2019

The third Training Workshop took place at the JKU Life Science Center, in Linz (Austria) coinciding with the third network meeting. This event was organized and hosted by Dr. Peter Hinterdorfer (JKU) and all 14 ESRs of the Network participated.

The courses offered were:

C5. Winter school on single molecule biophysics for nano-biotechnology. *The annual Linz Winter school was a 2-days event with talks and hands-on sessions on new techniques in single molecule biophysics for life science applications. It included technologies like combined force microscopy and fluorescence microscopy or patch clamp technology. In particular:* • 29/01/2019: Talk Session - Basic principles and biological applications. • 30/01/2019: Demo Session - Live demonstrations..

N4. Intellectual property rights: protecting your discoveries and findings. *A short course on intellectual property rights was given by a partner very active in these aspects (16 licenced patents & 2 spin-off companies created). The course contained both theoretical & practical aspects, the latter being devoted to designing a protection knowledge strategy for the research being carried by each ESR.*

N6. Market studies and product. *A short course on market studies and on the different phases of product development was given. GK-nano consulting and KEYSIGHT shared their expertise in both commercialisation of research and application of research knowledge to solving industry problems. Examples of case studies and real-world commercialisation examples were also given.*

Training Workshop 4, Teddington (UK), 18th-21st June 2019

The fourth Training Workshop took place at the National Physical Laboratory, in Teddington (UK). The event was organized and hosted by Prof. Fernando Castro and Dr. Sebastian Wood (NPL) and all 14 ESRs of the Network participated.

The courses offered were:

C7: Fabrication of AFM probes (including virtual "visit" to probe fabrication facilities). *The principles of probe design and fabrication were given in this course together with explicit examples for probes of interest for the research program (e.g. high speed probes).*

C6: Metrology and standardization in SPM. *An introduction to the basic concepts of metrology and standardisation was offered, together with specific examples related to atomic force microscopy techniques.*

N5: Entrepreneurship: creating technology based companies. *A short course describing and discussing the main steps from "great ideas" to the creation of companies from spin-offs to consolidated companies was provided. The detailed timing of the various items depended on the interest of the participants for a more in-depth discussion.*

Training Workshop 3



Training Workshop 4



Deliverables and Milestones completed within the third year (M25-M36)

Management Deliverables

- D8.6. Report of the assessment commissions (2nd). (INSERM).
- D8.7. Network wide courses minutes (Training Workshop 3). (JKU).
- D9.7. Network meeting minutes (Meeting 2). (IBEC).
- D8.9. Network wide courses minutes (Training Workshop 4). (NPL).
- D8.10. Report of the assessment commissions (3rd). (INSERM).
- D8.11. Network wide courses minutes (Training Workshop 5). (INSERM).
- D8.12. Network Newsletters (3rd). (KEYSIGHT).
- D9.9. Network meeting minutes (Meeting 3). (IBEC).

RTD Deliverables

- D3.1. IR-s-SNOM for sub-10 nm optical composition mapping. (NANO GUNE).
- D3.2. m-SFM for sub-5 nm mechanical compositional mapping. (CSIC).
- D3.3. EFM for sub-10 nm dielectric composition mapping. (IBEC).
- D3.4. Molecular recognition HS-AFM. (JKU).
- D3.5. EFM for 3D dielectric nanotomography. (IBEC).
- D3.6. SMM for 3D doping profiling. (KEYSIGHT).
- D4.1. Environmental control kit for HS-AFM. (INSERM).
- D4.2. Novel high speed AFM probes. (TUW).
- D4.3. Chemical high speed AFM probes. (JKU).
- D4.4. Antenna probes for Infrared SNOM. (NANO GUNE).

Milestones

- MS6. Midterm project assessment (IBEC).
- MS7. High speed AFM molecular tracking. (JKU).
- MS8. Chemical IR-s-SNOM in liquid. (NANO GUNE).
- MS9. 3D Nanotomographic EFM. (IBEC).
- MS10. High speed molecular tracking probes. (TUW).

SPM2.0 Publications during the third year (M25-M36)

- Marta Autore, **Lars Mester (ESR8, NANO GUNE)**, Monika Goikoetxea, **Rainer Hillenbrand (NANO GUNE)**. [Substrate Matters: Surface-polaritation enhanced infrared nanospectroscopy of molecular vibrations](#). Nanoletters, 19: 8066-8073 (2019).
- **Jonas Hafner (ESR12, TUW)**, Jürgen Schratzenholzer, Marco Teuschel, Michael Schneider, Daniel Platz, **Ulrich Schmid (TUW)**. [Modelling the distribution of BaTiO₃ nanoparticles in a P\(VDF₇₀-TrFE₃₀\) polymer matrix for permittivity calculation](#). Polymer, 180: 121682 (2019).
- **Simone Benaglia (ESR5, ICMC)**, Carlos A. Amo, **Ricardo Garcia (ICMM)**. [Fast quantitative and high resolution mapping of viscoelastic properties with bimodal AFM](#). Nanoscale, 11: 15289-15297 (2019).
- Giang Ngo, Gautier Félix, Jérôme Long, Luca Costa, **Oscar Saavedra (ESR3, INSERM)**, **Pierre-Emmanuel Milhiet (INSERM)**, Jean-Marie Devoisselle, Yannick Guari, Joulia Larionova and Joël Chopineau. [A simple approach for controlled deposition of Prussian blue analogue nanoparticles on a functionalised plasmonic gold surface](#). New Journal of Chemistry, 43: 3660-3664 (2019).
- **Jonas Hafner (ESR12, TUW)**, Marco Teuschel, Michael Schneider, **Ulrich Schmid (TUW)**. [Origin of the strong temperature effect on the piezoelectric response of the ferroelectric \(co-\)polymer P\(VDF₇₀-TrFE₃₀\)](#). Polymer, 170: 1-6 (2019).

Future Actions

Network meeting 4, Linz (Austria), January 2020.

Training Workshop 5, Linz (Austria), January 2020:

Training Workshop 6, San Sebastian (Spain), June 2020: