

Nanospectroscopy

Objectives

- Investigate processes, objects, and material properties with unprecedented spatial and temporal resolution as well as chemical specificity
- Create, spectroscopically investigate, and theoretically model novel tailored nanosystems to gain deeper understanding of nanoscale processes
- Use nanospectroscopy to address biological processes on the (sub-)cellular level, light-matter-interaction, light-to-energy conversion, materials engineering, etc.
- Consolidate European expertise on all aspects of UV/vis/NIR nanospectroscopy
- Establish a multi-site, multidisciplinary European training and collaboration network which combines the different aspects of nanospectroscopy that are often separated
- Improve nanospectroscopy instrumentation and make nanospectroscopy available to a broader range of topics, materials and end-users
- Disseminate the acquired knowledge and give early stage researchers a solid base in nanospectroscopy training

Working Groups

- **WG 1 - System Design and Nanofabrication:** Advancing top-down and bottom-up fabrication of organic, inorganic and hybrid nanosystems; (supra)molecular engineering for novel thin-film and nanostructure geometries and compositions
- **WG 2 - Physical Processes and Modelling:** Understanding light-matter interaction in nanostructured systems & devices by experiments and theoretical/numerical models
- **WG 3 - Improving Spectroscopic Techniques:** Developing turn-key techniques and improving the real-time data processing of spectroscopic techniques with high spatial/spectral and temporal resolution and high sensitivity
- **WG 4 - Preparation of a Coherent Textbook on Optical Nanospectroscopy:** Publish a knowledge base for Early Stage Researchers written by experts

Main Achievements

- The 1st Annual Conference Optical Nanospectroscopy I was held in Tübingen, Germany, enabling the participants of the Action to become acquainted with each others' research and to spark ideas about future collaborations.
- At the conference the Working Groups met, identified open research questions to address, and established Capability Maps of the Participants in the areas of nanostructure synthesis and fabrication and nanospectroscopic techniques.
- First STSMs performed work on perfect absorbers and single crystal plasmonics, and first bilateral publications are in preparation.

Gender Balance and Early Stage Researchers

- Addressing female scientists and ESRs as potential participants in order to create gender balance and to promote young researchers
- Status: ~25% female participants, ~22% Early Stage Researchers
- Conference Optical Nanospectroscopy I: ~20% female participants, ~33% contributed talks by female participants, ~55% PhD students/ESR

Dissemination

- Action website online with information about the meetings, STSMs and training schools, and a detailed database of all Participants ("capability map") in progress
- Special issue of the open access journal "Nanospectroscopy" dedicated to the Action's 1st Annual Conference "Optical Nanospectroscopy I" in progress

Materials,
Physics &
Nanosciences
(MPNS)



Participating countries: 29

AT, BA, BE, BG, CH, CZ, DE, DK, EE, ES, FI, FR, GR, HR, HU, IE, IL, IT, LT, MT, NL, PL, PT, RO, RS, SE, SI, TR, UK

Internat. Collaboration:

UA, TN (awaiting validation)

Contact details

Chair of the Action

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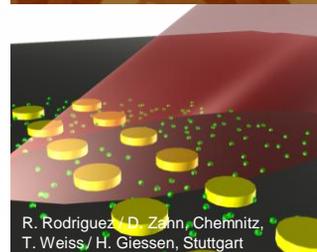
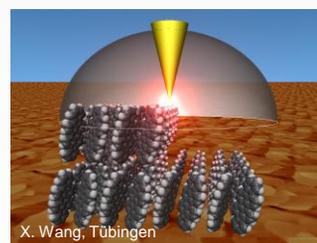
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Action Website

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Schematic examples of tip-enhanced and nanoparticle nanospectroscopy



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