

SUMMER SCHOOL ELENAM:



METROLOGY AT THE NANOSCALE

Objectives

This international school is devoted to the **measurement at the nanoscale**. It covers a large number of physical and chemical quantities: dimensions, electric and magnetic field, capacitance, resistance, optical properties, *etc.*, and a large panel of characterization techniques: near field microscopies, electronic microscopies, optical spectroscopies, X-ray diffraction, *etc.* A particular attention will also be given to mathematical, computational and numerical methods (molecular dynamics (MD), finite elements (FEM), density functional theory (DFT) simulations and artificial intelligence (AI)). The specificities of the measurement process at such small scale will be emphasized and specific tools and methods exposed within a mix of lectures and experimental / numerical tutorials.

Date and Place

The summer school will be held in "La Villa Clythia", Frejus, **from June 3rd to June 7th, 2024**

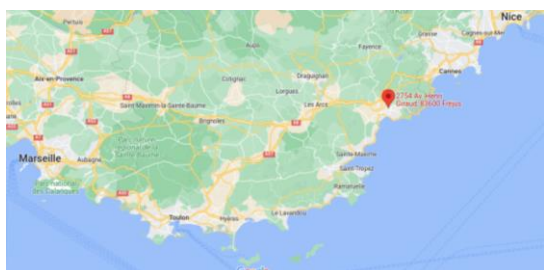
Intended audience

The school is open to any junior or senior researcher, research engineer, PhD student or postdoctoral fellow.

Topics addressed:

- Dimensional metrology
- X-ray diffraction
- Electric modes derived from AFM: Kelvin Force, Conductive-AFM, Scanning Capacitance, Scanning Spreading Resistance, Scanning Microwave and Piezoresponse Force Microscopies.
- Thermal characterization (3ω , SThM, optical techniques)
- Optical spectroscopies (Raman, ellipsometry...)
- Magnetic characterizations
- Uncertainty evaluation
- Mathematical and computational methods: MD, FEM, DFT simulations and AI.

Organisation committee	Scientific committee
<p>Nolwenn Fleurence, <i>Laboratoire national de métrologie et d'essais (LNE)</i></p> <p>Brice Gautier, <i>Institut des nanotechnologies de Lyon (INL)</i></p> <p>Séverine Gomès, <i>Centre d'énergétique et de thermique de Lyon (CETHIL)</i></p> <p>Sylvie Le Roy, <i>Laboratoire national de métrologie et d'essais (LNE)</i></p> <p>François Piquemal, <i>Laboratoire national de métrologie et d'essais (LNE)</i></p>	<p>Olivier Bourgeois, <i>Institut Néel - CNRS</i></p> <p>Rosine Coq Germanicus, <i>Crismat, Université de Normandie, CNRS</i></p> <p>Johannes Hoffmann, <i>Federal Institute of Metrology (METAS)</i></p> <p>Petr Klapetek, <i>Czech Metrology Institute (CMI)</i></p> <p>Hans Werner Schumacher, <i>Physikalisch-Technische Bundesanstalt (PTB)</i></p>



Poster sessions:

The participants will have the opportunity to present their work during the poster sessions. Templates will be available on dedicated website: <https://www.lne.fr/en/events/summer-school-elenam-metrology-nanoscale>. The abstract submission deadline is 15th of April 2024. Authors will be notified of acceptance of their abstract for poster presentation by 23th of April 2024.

Preliminary agenda:

The school will combine lectures, practical sessions, poster session, round tables and exhibition times to encourage exchanges between participants, speakers, partners and exhibitors.

Contact: Elenam.SummerSchool@lne.fr

Practical information:

The summer school will start on June 3rd at 1:20 p.m. for the lunch. Host will be start at 12:20 p.m. The school will be held in the Centre de Vacances et Colloques La Villa Clythia, located on the French Riviera, near Nice.

Registration procedure is available on the web site: <https://www.lne.fr/en/events/summer-school-elenam-metrology-nanoscale>; registration fees (excl. tax): 750€ max and 400 € min depending on status and affiliation (no registration fees for CNRS staff). The price includes accommodation, meals and coffee breaks from lunch on Monday to lunch on Friday. It is possible to book additional nights (at extra cost) by contacting "La villa Clythia" directly at the following address: frejus@caes.cnrs.fr.

Venue:

By train: from Paris, Lyon, Nice, Lille, Marseille

Get off at "Saint-Raphaël – Valescure" train station then walk to "Saint-Raphaël Gare Routière - Quai H" the bus station. Take line 3 to "Fréjus Gare Routière". Get off at "Villa Clythia" bus stop.

*There is a direct overnight train from "Paris Austerlitz at 8:51 am" to "Saint-Raphaël – Valescure at 8:33 pm"

*In addition to the regional bus lines, we will organise shuttle from the train station "Saint-Raphaël – Valescure" (Please complete the survey: <https://forms.gle/KsSXAwUxKSKjSZZ9>).

For more information :

SNCF (timetables, fares, online booking...)

Website : <https://www.sncf-connect.com/en-en/>

Bus Lines

<https://www.esterelcotedazur-lebus.fr/> (website in French)

<https://itineraires-zou.maregionsud.fr/en/> (website in English)

Partners and Exhibitors:

