The Nanoscience Cooperative Research Center, CIC nanoGUNE, located in Donostia / San Sebastian, Basque Country (Spain), is currently looking for a

MASTER STUDENT
to work on

Nanomagnetism

CIC nanoGUNE
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

Nanomagnetism Gro

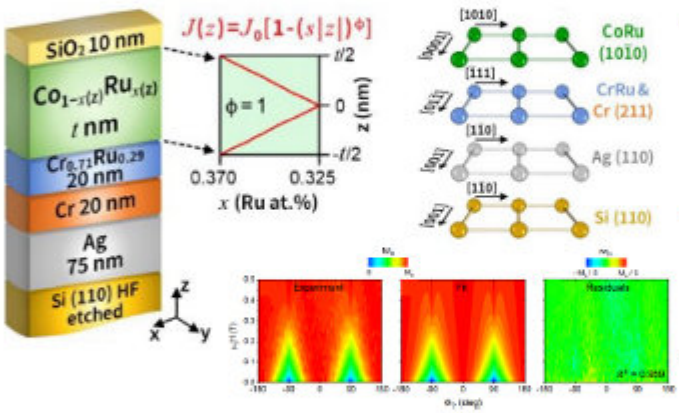
Andreas Berger (Group Leader, Research Director)
Paolo Vavassori (Group Coleader, Ikerbasque Professor)
Mikel Quintana, **Carmen Martín**, **Terunori Kahiara**, **Chandan Pandey**, **Matteo Me**

The Nanomagnetism Group is conducting basic and applied world-class research in the f
a long-standing expertise and proven track record in fundamental and applied aspects
characterization, especially magneto-optical methods.

Modern materials

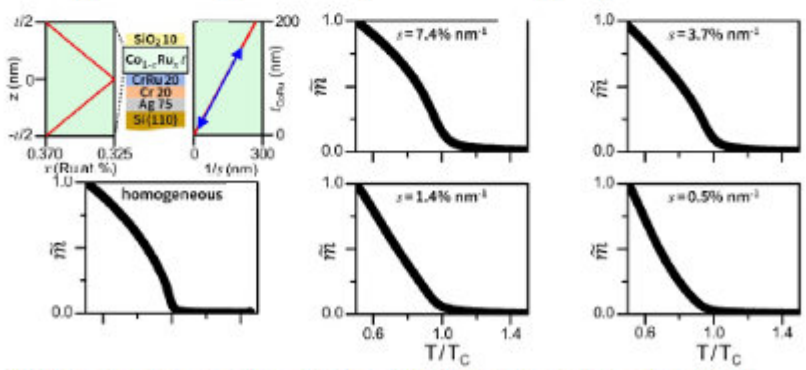
Design of multilayer structures with tuned magnetic properties

Sample fabrication: sputter deposition



- **Graded magnetic films** are grown by means of depth-dependent alloy compositions with sub-nm depth control, while maintaining an epitaxial single crystal film structure
- **Precise anisotropy** control can be achieved leading to laterally uniform magnetic states (using suitable underlayer sequences)
- **Designed structural and magnetic properties**

Application: tuning the critical exponents of ferromagnetic phase transitions



Critical exponents can be designed and controlled enabling one to bypass universality of phase transitions

References

- *"Modifying Critical Exponents of Magnetic Phase Transitions via Nanoscale Materials Design"*, L. Fallarino, E. López Rojo, M. Quintana, J. S. Salcedo Gallo, B. J. Kirby, and A. Berger, Phys. Rev. Lett. **127**, 147201 (2021).
- *"Nanoscale control of temperature operation ranges for magnetocaloric applications"*, J. S. Salcedo Gallo, A. Berger, M. Quintana, E. Restrepo Parra and L. Fallarino, J. Phys. D: Appl. Phys. **54**, 304003 (2021).
- *"Suppression of Coercivity in Nanoscale Graded Magnetic Materials"*, L. Fallarino, M. Quintana, E. Lopez Rojo, and A. Berger, Phys. Rev. Appl. **16**, 034038 (2021).
- *"Design of temperature independent coercivity in compositionally graded ferromagnetic multilayers"*, M. Quintana, A. Meléndez, C. Martín Valderrama, L. Fallarino , and A. Berger, Phys. Rev. Appl. **18**, 054024 (2022).

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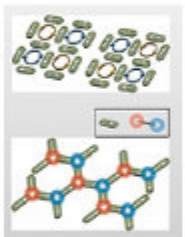

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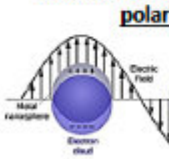


- Wavelength and dependent
- Size dependent
- Environment dep

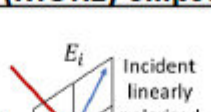
References

- *"Selective and fast* 7656-7666 (2019).
- *"Chiral switching an* (2021)
- *"Thermoplasmonic* Applied **18**, 024014

Magneto-optics

Magneto-optical Kerr effect (MOKE) ellipsometry techniques

Ellipsometry measures the polarization state of light after reflection → Determine **optical properties** of the sample



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Candidates should **apply** by completing the form below and attaching the following documents:

a. A complete CV
b. A cover letter and at least two reference letters grouped in a single PDF file

The **deadline** for applications is **29/02/2024**.

NOTES:
(i) All applicants will receive an answer after the end of the selection process; but please note that due to the large number of submissions that are expected, we cannot provide individual feedback.
(ii) Additional information about nanoGUNE's commitment towards HR excellence in Research and Gender Equality are available on our website.
(iii) We encourage you to subscribe to our HR mailing list to receive information related to nanoGUNE's open positions and open calls for different training and talent attraction programs.