

# Advanced imaging techniques in biomineralisation research

14-16 May 2025 | Edinburgh, Scotland



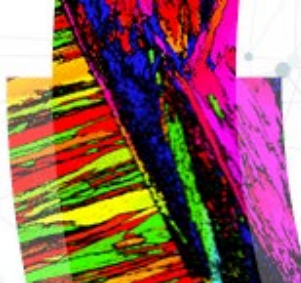
## Faraday Discussions

14 May 2025

11:30	Registration with lunch served from 11.45
12:45	<b>Welcome and introductions</b> Fabio Nudelmann, <i>Chair of Scientific Committee</i>
12:55	<b>Outline of Discussion format</b> Sam Oldknow and Hannah Hamilton <i>Royal Society of Chemistry Publishing Editors</i>
13:00	<b>Introductory Lecture – Spiers Memorial Lecture</b> (Session chair: xxx) Prof. Laurie Gower <i>University of Florida, USA</i>
14:00	Comfort break (no refreshments)
	<b>Session 1: Crystal nucleation in biominerals</b> (Session chairs: xxx)
14:15	<b>Calcium Detection Limits by EELS and EDX in the TEM and by Synchrotron X-ray Absorption</b> Peter Rez <i>Arizona State University, USA</i>
14:20	<b>Atomistic insight into the interaction of aspartic acid species with calcium carbonate: model development and validation</b> Raffaella Demichelis <i>Curtin University, Australia</i>
14:25	<b>Elucidating atomic-level details of the protein-calcite interface with solid state NMR</b> Emily Saccuzzo <i>Pacific Northwestern National Labs, USA</i>
14:30	<b>Cryo-fixation approach for solid-state NMR study of out-of-equilibrium aqueous solutions</b> Thierry Azais <i>Sorbonne University, France</i>
14:35	Discussion
16:15	Refreshments
	<b>Session 2: Interfaces at the nano scale</b> (Session chairs: xxx)
16:45	<b>Title</b> Henrik Birkedal <i>Aarhus University, Denmark</i>
16:50	<b>Synchrotron X-ray Nanoprobe Imaging and Electron Microscopy Elucidate the Role of Surface Chemistry of Self-assembling Peptides in Calcium Phosphate Nucleation</b> Reham Gonnah <i>University of Leeds, UK</i>
16:55	<b>Revealing Shark Enameloid Chemistry at the Nanoscale</b> Alberto Perez-Huerta <i>The University of Alabama, USA</i>
17:00	Discussion
18:15	Lightning presentations (by invitation of the Scientific Committee) Session chair: xxx
18:30	Poster session and wine reception
19:45	Close

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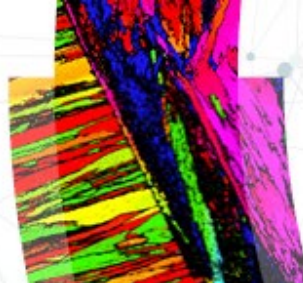
## Faraday Discussions

15 May 2025

	<b>Session 2 cont.: Interfaces at the nano scale</b> (Session chairs: xxx)
09:00	<b>Insights on the amorphous-to-crystalline transition mechanisms in calcareous biomineralisation from Bragg ptychography</b> Virginie Chamard <i>Fresnel Institute, France</i>
09:05	<b>Convergence in biomineralization patterns across animal eggshells</b> Liliana D'Alba <i>Naturalis Biodiversity Center, Belgium</i>
09:10	<b>Exploiting nanoprobe X-ray techniques for imaging of biomineralisation; chemical, structural and in situ opportunities</b> Julia Parker <i>Diamond Light Source, UK</i>
09:15	<b>Nanobeam-Scanning X-ray Microscopy Reveals the Intracellular Structure and Composition of Biomineralizing Coccolithophores</b> Daniel Chevrier <i>CNRS, France</i>
09:20	Discussion
11:00	Refreshments
	<b>Session 3: Interfaces at the micron scale</b> (Session chairs: xxx)
11:30	<b>The detection efficiency of low-dose cryo-4D STEM for biogenic crystals in their native environment</b> Lothar Houben <i>Weizmann Institute of Science, Israel</i>
11:35	<b>Carbonate Calcium polymorphs imaging with high spectral resolution stimulated Raman scattering, towards in vivo imaging</b> Julien Duboisset <i>Aix-Marseille Universite, France</i>
11:40	<b>High-resolution imaging of coral skeleton micro structures</b> Katrein Sauer <i>Marine Biology Department, University of Haifa, Israel</i>
11:45	Discussion
13:00	Lunch
	<b>Session 3 cont. Interfaces at the micron scale</b> (Session chairs: xxx)
14:00	<b>A computational approach to address stereom's polymorphism across sea urchin species</b> Luca Bertinetti <i>Technische Universitat Dresden, Germany</i>
14:05	<b>Silica biomineralization in plants alters the structure of lignin</b> Srinath Palakurthy <i>Hebrew University of Jerusalem, Israel</i>
14:10	<b>Oyster larval biomineralisation - insights from Electron BackScatter Diffraction</b> Kanmani Chandra Rajan <i>City University of Hong Kong, China</i>

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14:15	Discussion
15:30	Refreshments
16:00	<b>Bone mineralization trajectories in normal wild type and osteomalacic transgenic mutant mice</b> Marc McKee <i>McGill University, Canada</i>
15:20	<b>Calcium Transport Dynamics from Vascularization in Quail Embryos Revealed by Cryo-Correlative Light and Electron Microscopy (cryo-CLEM)</b> Emeline Raguin <i>Max Planck Institute of Colloids and Interfaces, Germany</i>
15:25	<b>Imaging the Orientation of Hydroxyapatite Crystallites Across Full Mouse Femurs</b> Thorbjorn E. K. Christensen <i>MAX IV and DTU, Sweden</i>
15:30	Discussion
16:45	Close of sessions
18:30	Pre-dinner drinks
19:00	Conference dinner

## 16 May 2025

	<b>Session 4: Connecting length scales</b> (Session chairs: xxx)
09:00	<b>Structure versus Composition: A Comparative Study Across Scales</b> Yannicke Dauphin <i>Museum National d'Histoire Naturelle, Paris, France</i>
09:05	<b>Multiscale spectroscopic imaging for tracking metal uptake and cross-linking by mussels</b> Matthew Harrington <i>McGill University, Canada</i>
09:10	<b>Combined crystallographic study of King Scallop shells using EBDS and Raman spectroscopy</b> Lise Guichaoa <i>McGill University, Canada</i>
09:15	Discussion
10:30	Refreshments
11:00	<b>Investigating Temperature Influences on Shell Growth and Microstructural Variations in Bay Scallops: Insights from Multiscale Microscopy</b> Benazir Khurshid <i>McGill University, Canada</i>
11:05	<b>Non-contact IR imaging: New spectroscopic insights across teeth</b> Franco Lizzi <i>Charité Universitätsmedizin, Germany</i>
11:10	Discussion
12:00	<b>Concluding Remarks Lecture</b> (Session chair: Roland Kröger) Frédéric Marin <i>University of Bourgogne, France</i>
12:30	<b>Acknowledgements and presentation of poster prizes</b>
12:45	<b>Close of meeting and lunch</b>

Please note that this is a draft programme and timings may change.