Kyoto University On-site Laboratory: Center for Integrated Data-Material Sciences (iDM)



General Information

- Approved in FY 2021
- Established in January 2022
- Established by the Institute for Integrated Cell-Material Sciences (iCeMS), Kyoto University Institute for Advanced Study (KUIAS)
- Partner institution: The MacDiarmid Institute for Advanced Materials and Nanotechnology, New Zealand
- Purpose: Perform integrative data science-materials science research
- Location: Wellington University, Wellington, New Zealand (outbound)
- Functions: Deepen research on material sciences using computational science and data science, and internationalize Kyoto University's research and education activities by enhancing collaboration with industry and local research institutions.

Positive ripple effects to the university's activities

- Development of interdisciplinary fields combining data science and material science.
- International industrial application of materials developed at Kyoto University
- Cultivating the perspective of contributing to the international community through basic research among students and early-career researchers.
- Raising the profile of the Kyoto University brand in Oceania.
- Expanding local research networks and enhancing the brand recognition of Kyoto University and KUIAS through establishing a policy for research on semiconductor materials and porous materials with local research institutions, which is anticipated to contribute to the achievement of a decarbonized society.
- Creating networks with local companies and Japanese companies, which can lead to research collaboration.
- > Encouraging exchanges among early-career researchers and international students.
- Promoting the fusion of the humanities and sciences through research plans that fully respect the beliefs and customs of the Maori (indigenous people of New Zealand).



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Main activities in FY 2024

1 Dispatch / acceptance of researchers

[Kyoto \rightarrow MacDiarmid Institute]

- 1-month stays by faculty (1) and postdocs (2) at MacDiarmid research groups for collaboration
- Participation and presentations at the MacDiarmid Symposium by postdocs (2)
- 1-month Internship at the MacDiarmid venture company Advemto by an undergraduate student (1)

[MacDiarmid Institute \rightarrow Kyoto]

- 1-month stays at iCeMS by young researchers (4) from the MacDiarmid Institute
- 2-week stays by MacDiarmid faculty (2)
- Acceptance of MacDiarmid young researcher (1) as a JSPS Foreign Postdoctoral Fellow (host institute: iCeMS)

Organic semiconductor research with data science

- Trained a graph neural network with high universality using New Zealand material data; reproduced exciton diffusion in organic materials with high accuracy.
- Opened the way to virtual screening of novel semiconductor materials.

