

Unit Name

Quantum Materials Science Unit

Collaborations

Takeshi Kondo, The University of Tokyo, Japan, Photoemission Experiments

Anjan Soumyanarayanan, Agency for Science, Technology and Research (A-Star), Singapore, Magnetic Imaging

Takayuki Harada, National Institute for Materials Science, Japan, Oxide electronics

(1) Daichi Chiba (2) Ryuhei Kono, International Center for Synchrotron Radiation Innovation Smart (SRIS), Tohoku University, Japan, Nanoelastronics

(1) Feng-Chuan Chuang (2) Hsin Lin (1) National Sun Yat-sen University (2) Academia Sinica, Taiwan, First Principle Calculations

Yasuhiro Niimi, Osaka University, Japan, Device Fabrication

Research Personnel

Chia Hsiu Hsu, Postdoctoral Scholar

Ryan Brady, Research Unit Technician

Chandan De, Postdoctoral Scholar

Tomonori Nakamura, Postdoctoral Scholar

Dyon van Dinter, PhD Student

Markel Pardo Almanza, PhD Student

Vadim Samardak, PhD Student

Scholarly Contributions and Creative Productions (by Faculty)

Journal Article

1. Okada, Y.
Electronic, Magnetic, and Topological Properties of Ferromagnetic 2D Perovskite-Type Oxides. New Journal of Physics 2024, 26.
<https://iopscience.iop.org/article/10.1088/1367-2630/ad9be0>
2. Okada, Y.
Imaging Josephson Vortices on Curved Junctions. Physical Review B 2024, 110.
<https://doi.org/10.1103/PhysRevB.110.224511>
3. Okada, Y.
Revealing Pronounced Electron-Hole Fermi Pockets in the Charge Density Wave Semimetal LaTe3
Physical Review B 2024, 110.
<https://doi.org/10.1103/PhysRevB.110.235415>
4. Okada, Y.

Uncovering Hidden Fermi Surface Instabilities through Visualizing Unconventional Quasi-Particle Interference in CeTe₃

Physical Review Materials 2024, 8.

<https://doi.org/10.1103/PhysRevMaterials.8.104004>

5. Okada, Y.

Dimensionality-Driven Power-Law Gap in the Bilayer TaTe₂ Grown by Molecular-Beam Epitaxy
APL Materials 2024, 12.

<https://doi.org/10.1063/5.0213957>

6. Okada, Y.

Controlled Sixfold Symmetric Exfoliation of Oriented MoS₂ Monolayers by Coulomb Force
Advanced Materials Interfaces 2024.

<https://doi.org/10.1002/admi.202300580>

7. Okada, Y.

Nontrivial Topology in Monolayer MA₂Z₄ (M = Ti, Zr, or Hf; A = Si or Ge; and Z = N, P, As, Sb, or Bi). The
Journal of Physical Chemistry C 2024, 128.

<https://pubs.acs.org/doi/10.1021/acs.jpcc.3c08285>

8. Okada, Y.

Magnetotransport Properties in van-Der-Waals RTe₃ (R = La, Ce, Tb)
Physical Review B 2024, 109.

<https://doi.org/10.1103/PhysRevB.109.134404>

9. Okada, Y.

Observation of Two-Level Critical-State in the van-Der-Waals Superconductor Pt_{1-x}(Bi_{1-x}Se_x)₂
Physical Review B 2025, 111.

<https://doi.org/10.1103/PhysRevB.111.064506>

10. Okada, Y.

Long-Range Magnetic Perturbations at Bi₂Te₃/Cr₂Te₃ Interfaces Induced by Chemical Diffusion and
Proximity Effects

Physical Review Materials 2025, 9.

<https://doi.org/10.1103/PhysRevMaterials.9.034203>

Presentation at Conference

1. Okada, Y.

Tunable Magnetism and Topological States in Cr_{1+d}Te₂ Films and Heterostructures. The 23rd
International Conference on Molecular-Beam Epitaxy (ICMBE 2024) 2024.

<https://icmbe2024.org/>

2. Okada, Y.

Rich Electronic Emergence in Antiferromagnetic vdW Metals, Semimetals, and Semiconductors
LANI/NIMS Quantum and Functional Materials and MANA International Symposium 2024 2024.

<https://www.nims.go.jp/mana/2024/>

3. Okada, Y.

Rich Emergence in Antiferromagnetic Low Dimensional Metals, Semimetals, and Semiconductors
CEMS Topical Meeting on Emergent Phenomena in Topological Quantum Materials 2024.

<https://cems.riken.jp/topicalmeeting/toppqm2024/program.html>

Seminars

1. Okada, Y.
Debate with PI Who Established Science Laboratory at New University in Okinawa. 2024.
2. Okada, Y.
Rich Emergence in Antiferromagnetic Low-Dimensional Metals, Semimetals and Semiconductors. 2024.

Scholarly Contributions (by Unit Members)

Name of Unit Member	Type	Title	Outlet	Publisher
Tomonori Nakamura	Presentation at Conference	Moiré superlattices of antimonene on a Bi(111) substrate with van Hove singularity and Rashba-type spin polarization	ISSS-10	The Japan Society of Vacuum and Surface Science

Workshops and Seminars (Organized and Hosted by Faculty/Units)

Speaker Name(s)	Title	Location	Co-Organizers	Date
Daichi Chiba (SRIS), Teruo Ono (Kyoto Univ.), Takahiro Namazu (KUAS), Hidefumi Takahashi (Osaka Univ.), Terumasa Tadano (NIMS), Kenichi Uchida (The Univ. of Tokyo-NIMS), Toshiaki Morita (Osaka Univ.)	The 2nd Nanoelastronics Workshop	Seminar room L4E48, OIST	(1) International Center for Synchrotron Radiation Innovation Smart (SRIS), Tohoku University (2) Institute of Scientific and Industrial Research, Osaka University	2024-10-21