

## 5th Hypermaterials Young Research Seminar

Date: 6.9.2023(Wed.) ~ 8.9.2023(Fri.)

Venue: Tokyo University of Science Oshamanbe Campus

Lecture time: 20 minutes (15 minutes presentation + 5 minutes Q&A)

About slides, posters and presentation languages:

- Participants in doctoral course and above must create slides and posters in English, Oral language shall be English.
- Bachelor's and Master's course participants may prepare slides, poster summaries and charts in English, and other parts in Japanese. Oral language may be Japanese. For poster presentations, the oral language will be changed to English if non-Japanese speakers are participating in the audience.

### 【Wednesday, September 6th】

9:30 – 9:35 Opening remarks Nayuta Takemori (Osaka University)

Lecture1 Chair: Ryuji Tamura (Tokyo University of Science)

9:35 – 11:25 Katsuhiro Yamamoto (Nagoya Institute of Technology)

"Hyper Materials in Soft Matters"

11:25 – 11:35 Coffee break

Oral session 1-1 Chair: Yutaka Iwasaki (NIMS)

11:35 – 11:55 Sasuke Sudo (Tokyo University of Science)

"Search for hypermaterial formation laws by machine learning"

11:55 – 12:15 Toranosuke Matsubara (Tokyo Institute of Technology)

"Extensions of the hexagonal golden-mean tiling"

12:15 – 13:15 Lunch

Oral session 1-2 Chair: Yoichiro Hashizume (Tokyo University of Science)

13:15 – 13:35 Takaki Abe (Tokyo University of Science)

"Magnetic properties of Au-SM-Eu 1/1 quasicrystal approximants"

13:35 – 13:55 Kotaro Hamano (The University of Tokyo)

"Superconductivity of Ta Te two dimensional van der Waals quasicrystal"

13:55 – 14:15 Shunsuke Ogasahara (Tokyo University of Science)

"Superconductivity of Au-SM-La (SM = Al, Ga) quasicrystal approximants"

14:15 – 14:35 Takumi Fukushima (The University of Tokyo)

"Supercurrent distribution in real-space and exotic paramagnetic response in a superconducting quasicrystal"

14:35 – 14:45 Coffee break

Group discussion & Poster Preview Chair: Takanobu Hiroto (NIMS)

14:45 – 17:00 Group discussion

17:00 – 17:30 Poster Preview

**【Thursday, September 7th】**

**Lecture2**

Chair: Takanori Sugimoto (Osaka University)

9:00 – 10:50 Shiro Sakai (RIKEN)

“Multifractality and hyperuniformity in quasiperiodic systems”

10:50 – 11:00 Coffee break

**Oral session 2-1**

Chair: Liu Chang (ISM)

11:00 – 11:20 Masahiro Hori (Tokyo University of Science)

“Multifractality and Hyperuniformity in the Disordered-Quasicrystalline Bose-Hubbard Model”

11:20 – 11:40 Riku Akao (Tokyo University of Science)

“Catalytic Properties of Ga-Ni-M(M=Sc, Zr, Hf)1/1 Approximate Crystals for CO<sub>2</sub> Methanation”

11:40 – 12:00 Zhang Jinjia (The University of Tokyo)

“Evaluation of phonon-phason coupling in quasicrystals by electron diffraction”

12:00 – 13:00 Lunch

13:00 – 16:00 Excursion

**Poster session**

16:00 – 18:00 Poster & Free discussion

**Poster**

1. Sinki Fujino (Tokyo University of Science)

“Search for Zn-based quasicrystals using machine learning”

2. Takanobu Hiroto (NIMS)

“Structural change of  $\beta$ -rhombohedral boron by temperature and light irradiation”

18:00 – 20:00 Dinner

**【Friday, September 8th】**

**Lecture3**

Chair: Nayuta Takemori (Osaka University)

9:00 – 10:50 Yutaka Iwasaki (NIMS)

“Thermoelectric properties of semiconducting hypermaterials”

10:50 – 11:00 closing remarks Yoichiro Hashizume (Tokyo University of Science)

**Free discussion**

13:00 – 14:30 Free discussion

(End)