

SOPHIA U



Sakura Science  
Exchange Program

# Introduction of Green Science and Engineering Division

## Graduate School of Science and Technology

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(Chairperson)

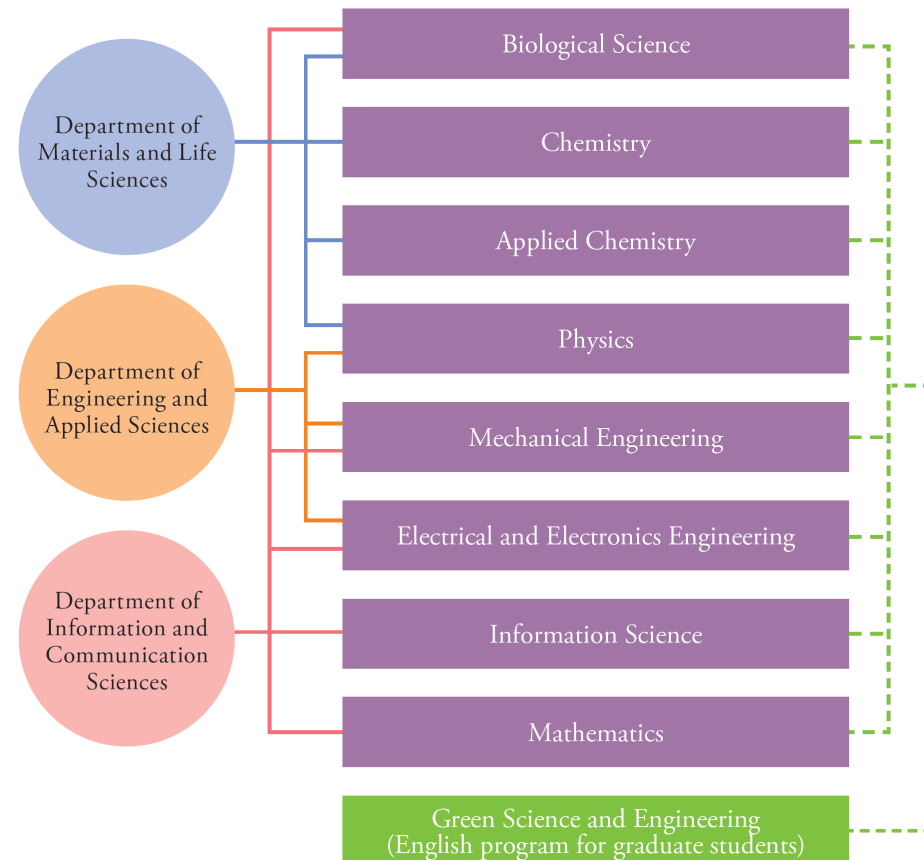


# Graduate School of Science and Technology

## What kind of research can you do ?

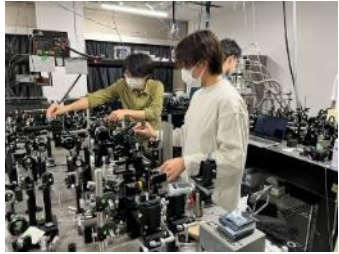
- Environmental and sustainability-related studies
- Faculty members from the eight divisions will be involved in teaching and research guidance.
- You can choose your research field and faculty member in a variety of research field of natural sciences.

All teaching and research guidance in English!



# Variety of Natural Sciences in the 8 Divisions

## Physics



Optical property of new devices



Atomic/molecular reaction in space

## Chemistry

Drug discovery

Molecular design

Chemical biology

Physical chemistry

Analytical /Complex chemistry

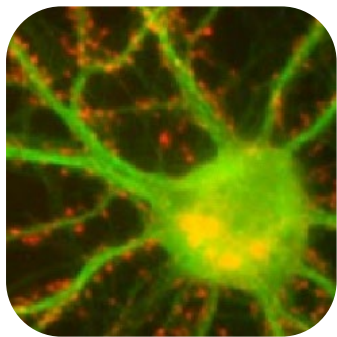
Organic chemistry

Inorganic chemistry

Volcanic chemistry

Atmospheric modeling

## Biological science



Neurons in the brain



Sleep movement of plants

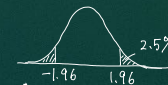
## Mathematics

### Research Contents

Differential Equation

$$\psi_z + (\psi \cdot \nabla) \psi = -\nabla p + D\psi + f$$

Statistics



Hecke algebra

$$G = \prod_{w \in W} B \omega B$$

Number Theory

$$\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s}, \quad \hat{\zeta}(s) = \hat{\zeta}(1-s)$$

Topology

$$K = \mathbb{Z}_7$$

$$\nabla_K(z) = 1 + 6z^2 + 5z^4 + z^6$$

Galois theory

$$\text{Gal}(x^4 - 20x^2 + 32/\mathbb{Q}) \simeq D_4$$

Quantum group

$$\chi_R \chi_R' = \prod_{b_k > 0} \chi_i^{b_k} + \prod_{b_k < 0} \chi_i^{-b_k}$$

Operator algebra

$$N \subset M \rightarrow MV(M(NM\infty)) \subset M\infty$$

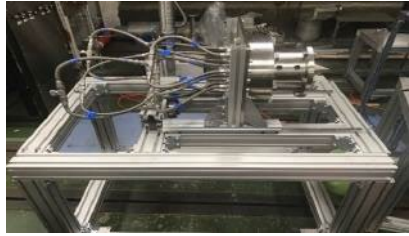
Arithmetic geometry

$$\prod_{p \leq x} \frac{N_p}{P} \approx C \log(x)^r$$



# Variety of Natural Sciences in the 8 Divisions

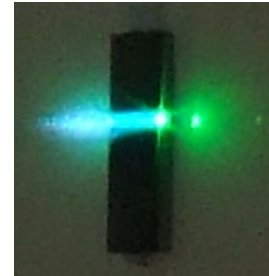
## Mechanical engineering



Jet engine powered by shock waves

- Automatic operation
- Multibody dynamics
- Bio/hydrogen materials
- Carbon-free engine

## Electrical and electronics engineering

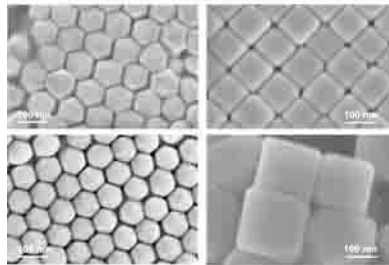


Semiconductor device



Telecommunications

## Applied chemistry



- Functional polymers
- Plasmonic optical material
- Electromagnetic wave chemistry
- Materials for storage batteries

## Information science



AI



Information media communication



Image processing

# *Students from all over the world !*



United States, Italy, Iran, India, Indonesia, Uzbekistan, Ethiopia, Oman, Cameroon, Kenya, Congo, Saudi Arabia, Sweden, Thailand, Chile, Germany, Turkey, Nigeria, New Zealand, Pakistan, Bangladesh, Bhutan, Philippines, Brazil, Vietnam, Benin, Poland, Malawi, Malaysia, Myanmar, Mexico, Jordan, Lithuania, Rwanda, United Kingdom, Korea, China, Japan

# Graduates are active in society, making use of what they have learned.

## Variety of career path

- ✓ Japanese/foreign companies
- ✓ Doctoral course / Academic

- Bosch
- Shiseido
- UD trucks
- Rakuten
- Mazda
- JFE Steel
- Terumo etc.



★ For details, visit



## Enrollment

- Master course: Autumn entry
- Doctoral course: Autumn/Spring entry



上智大学  
SOPHIA UNIVERSITY

FOR OTHERS, WITH OTHERS