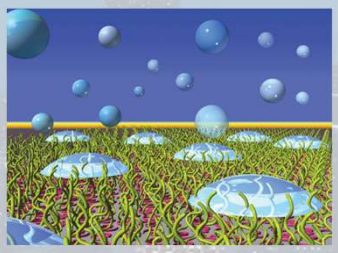
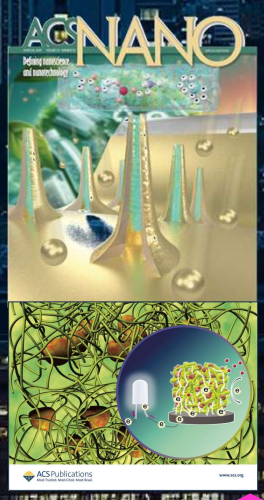
Bio interfaces open up the future of medicine ！

UTOKYO SCHOOL OF ENGINEERING Materials Engineering・Bioengineering Takai Lab

Bio interfaces ＝ Interfaces between living organisms and materials

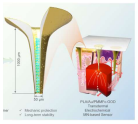
- ✓Understanding **the interface between biomaterials and materials** is important to make the most of biomaterials
- ✓Creation of biocompatible (hemocompatible and histocompatible) **biomaterials** by integrating biomolecules and nanomaterials





Development of biosensors/fuel cells oriented toward digital health

Development of microneedle type biosensor device



ACS Nano, **2024**

Development of a biofuel cell that generates electricity from glucose in the body

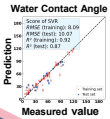
Carbon , **2019**, 152, 847

ACS Appl. Polym. Mater. **2021**, 3, 631

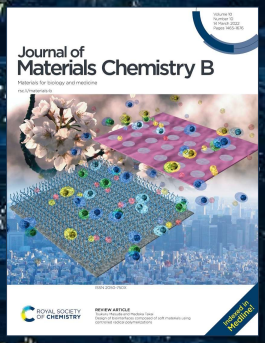
Analysis of interfacial properties using precision polymerization technology and modeling by machine learning

Analyze the relationship between water molecules at the interface and protein adsorption on the material, and predict by machine learning. Visualization of complex factors

J. Phys. Chem. C, **2015**, *119*, 17193.

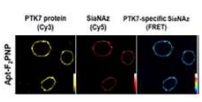


J. Phys. Chem. B, **2024**, *128*, 6589



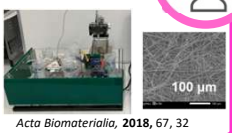
Development of in vitro diagnostic devices using nanofibers and nanoparticles

Creation of polymer fibers and nanoparticles by electrospinning method



Anal. Chem., **2021**, 93, 15420

Anal. Chem., **2020**, 92, 13271



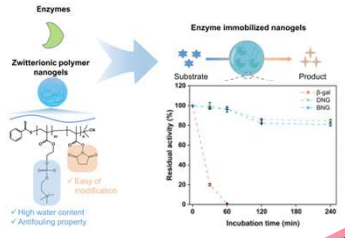
Acta Biomaterialia, **2018**, 67, 32

iScience 26, **2023**, *107820*

BIO×ENG

Nanogel technology to stabilize enzymes and cells

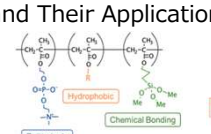
Design of zwitterionic polymer nanogels that stabilize enzymes and cells

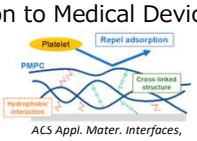


RSC Adv., **2024**, 14, 18807

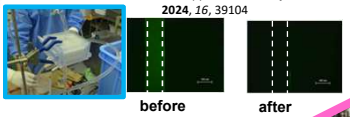
Development of medical device materials

Creation of Cross-linked Zwitterionic Polymers with Anti-thrombogenic Function and Their Application to Medical Devices





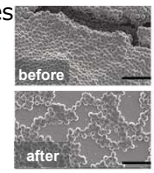
ACS Appl. Mater. Interfaces, **2024**, *16*, 39104



Front. Mater, **2022** , 877755

Functionalization of polymeric materials for bacteria and cells

Functionalization of interfaces through chemical and physical structure control of polymers and molecular modification to interact with bacteria and cells



Heliyon, **2024**, *10*, e26347

Langmuir, **2024**, *40*, 7029

ACS Appl. Mater. Interfaces, **2024**, *16*, 44575.