

ISHII LAB.

Development of Functional Molecules



Department of Materials and Environmental Science

Functional Metal Complexes Chemistry

Department of Applied Chemistry, Graduate School of Engineering

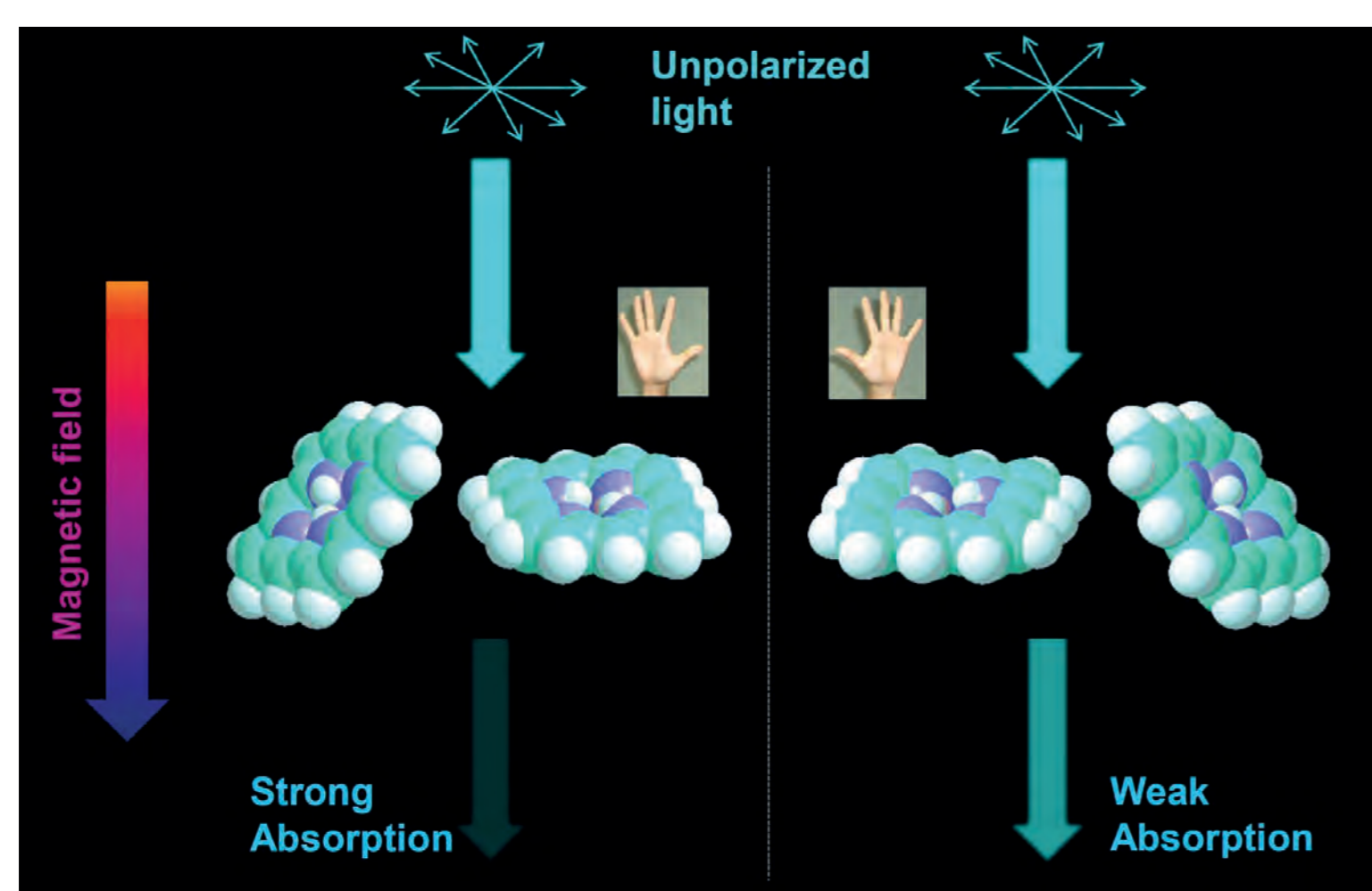
<https://www.k-ishiilab.iis.u-tokyo.ac.jp>

Functionalization of Molecules

The discovery and elucidation of new electronic structures are important not only for pioneering frontier science but also for developing new functions. Since metal complexes have various electronic structures, coordination chemistry is promising for designing electronic properties. We aim to create novel functions of organic-inorganic hybrid compounds in terms of coordination chemistry, photochemistry, and spin chemistry.

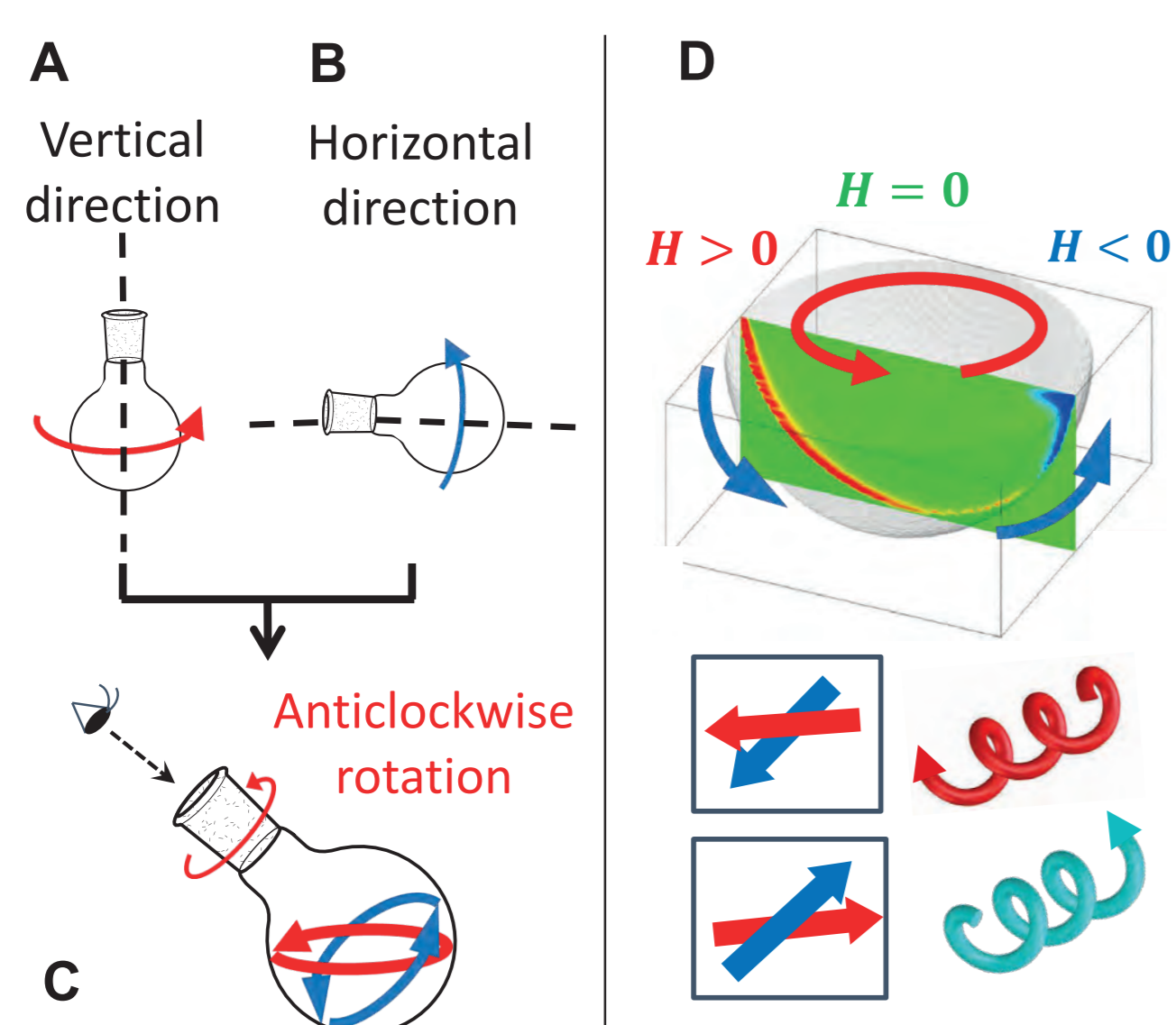
Chemistry of Photofunctional Molecules

Homochirality of Life : A Magnetic Answer



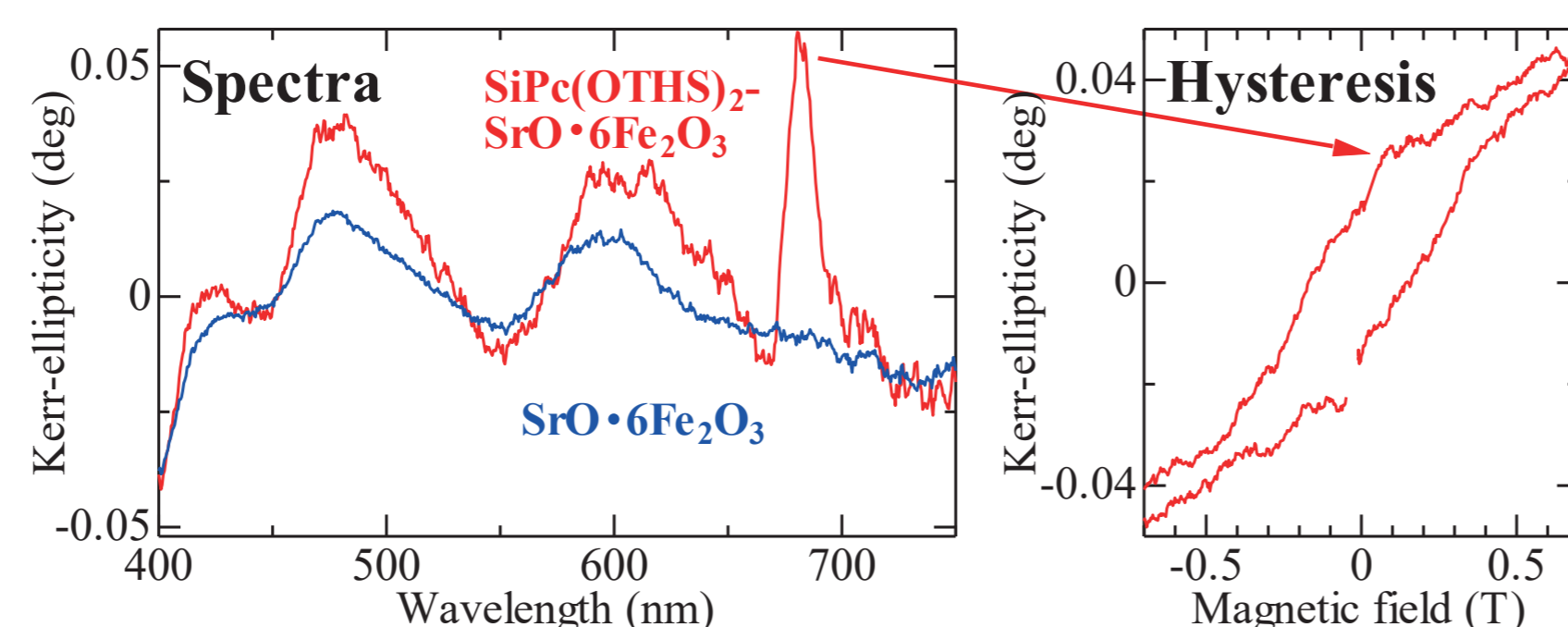
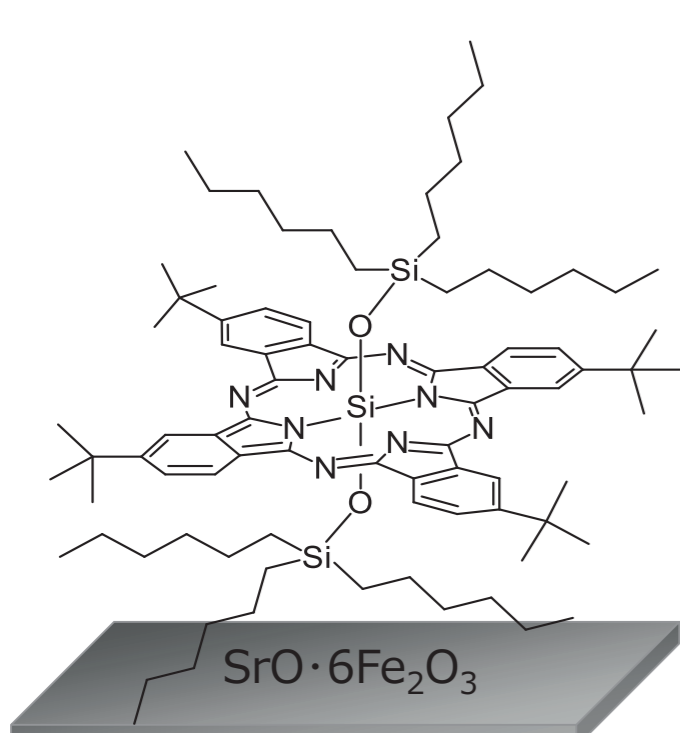
Magneto-Chiral Dichroism of Organic Compounds

Mechanical Control of Chirality



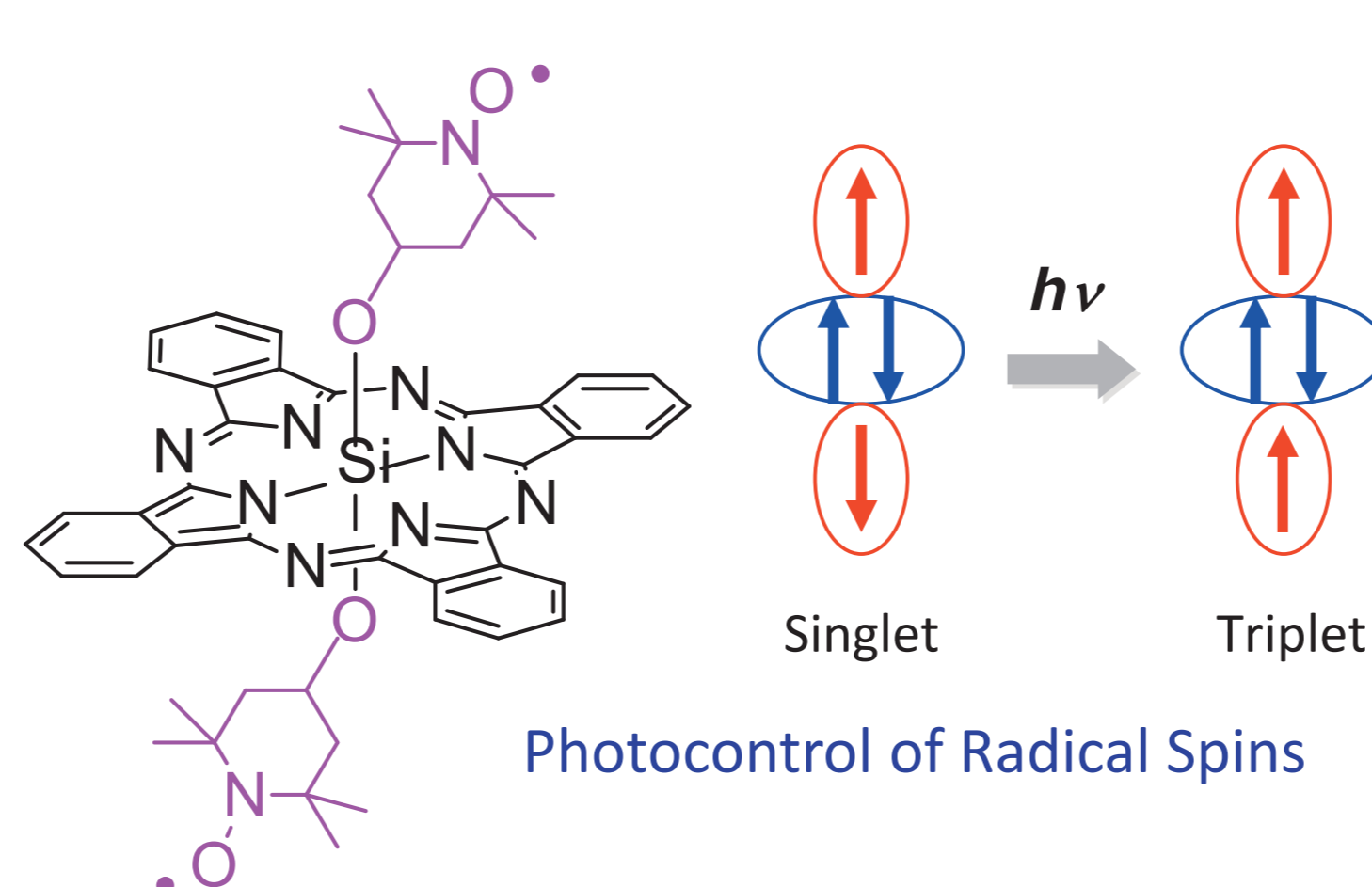
Preparation of Chiral-Aggregates Using a Rotary Evaporator

Molecular Magneto-Optical Materials



Molecular Magnetic Hysteresis at Room Temperature

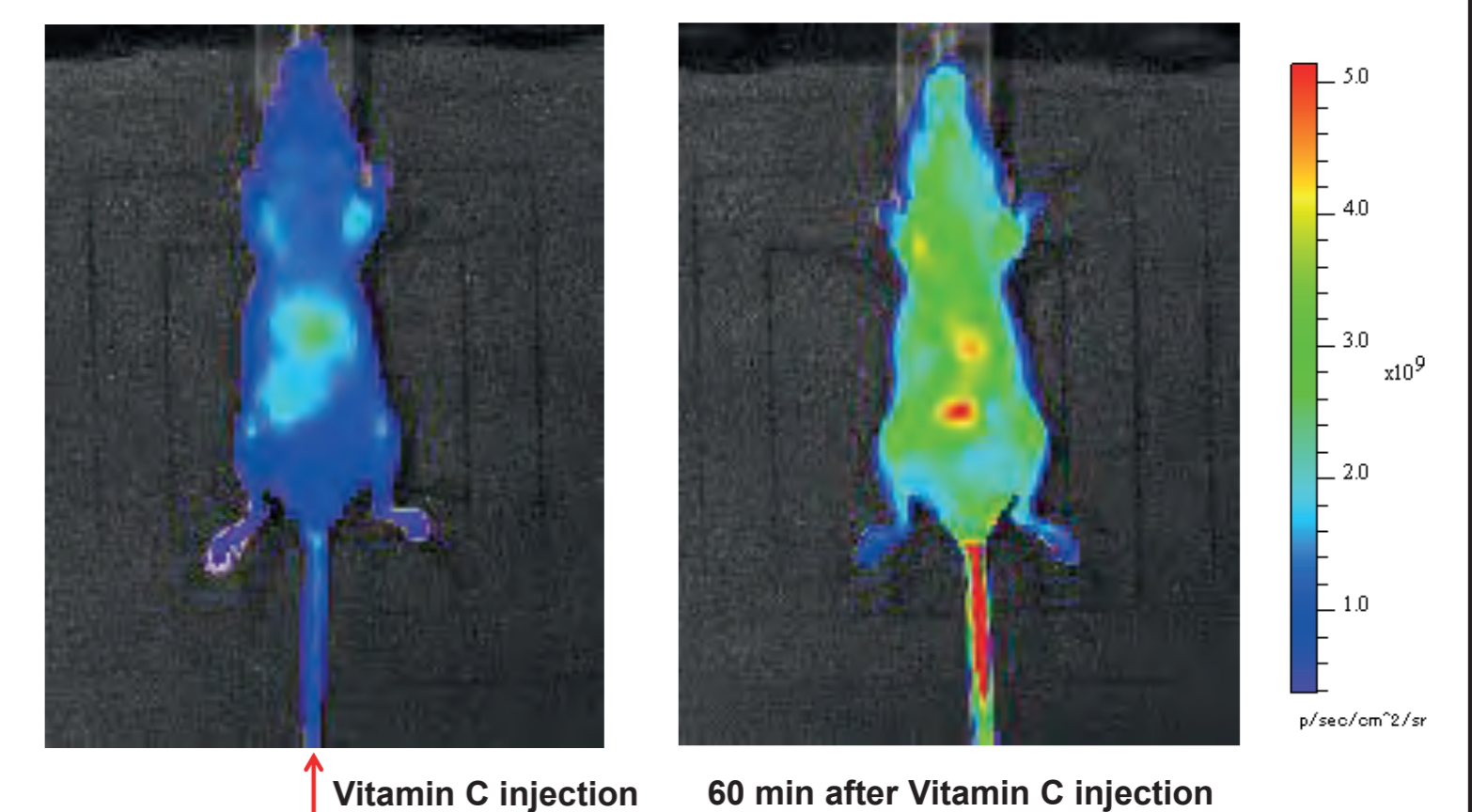
Photocontrol of Magnetic Properties



Photocontrol of Radical Spins

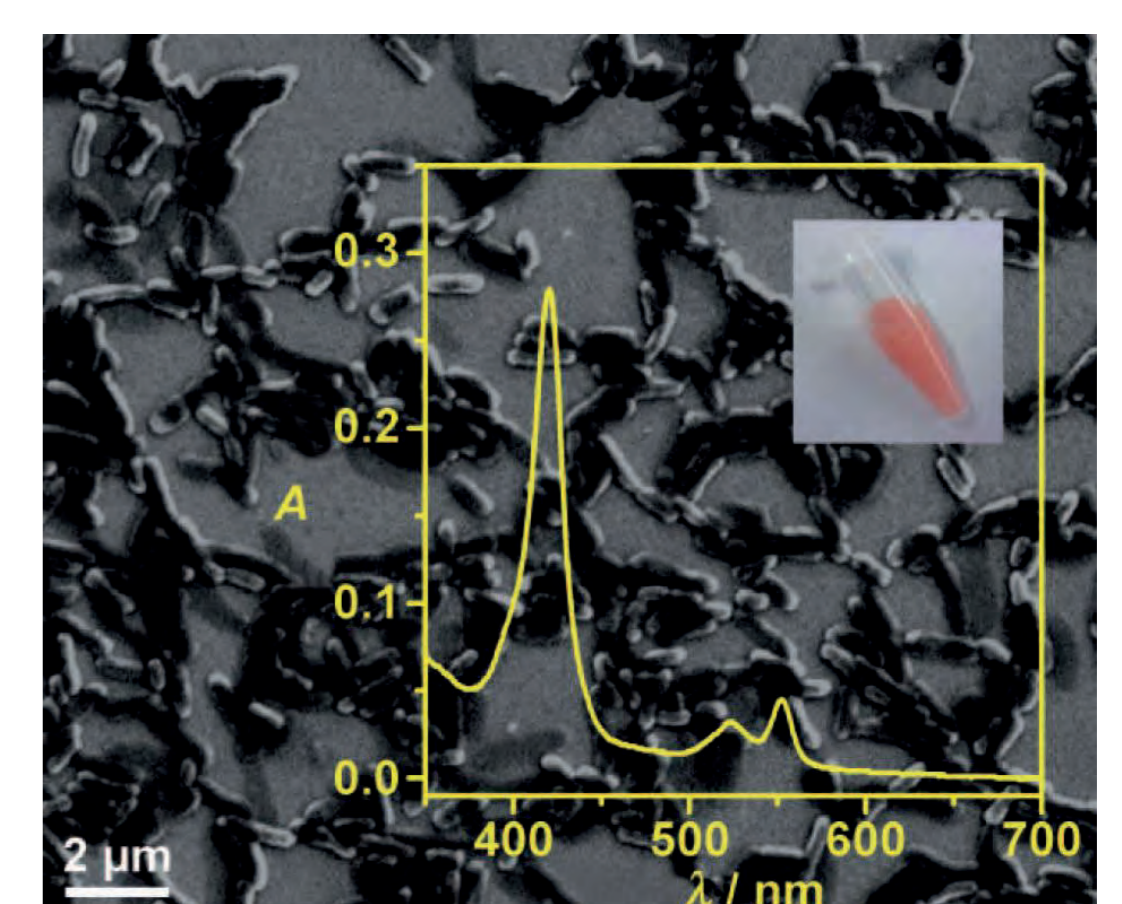
Chemistry of Biofunctional Molecules

Fluorescence Probes



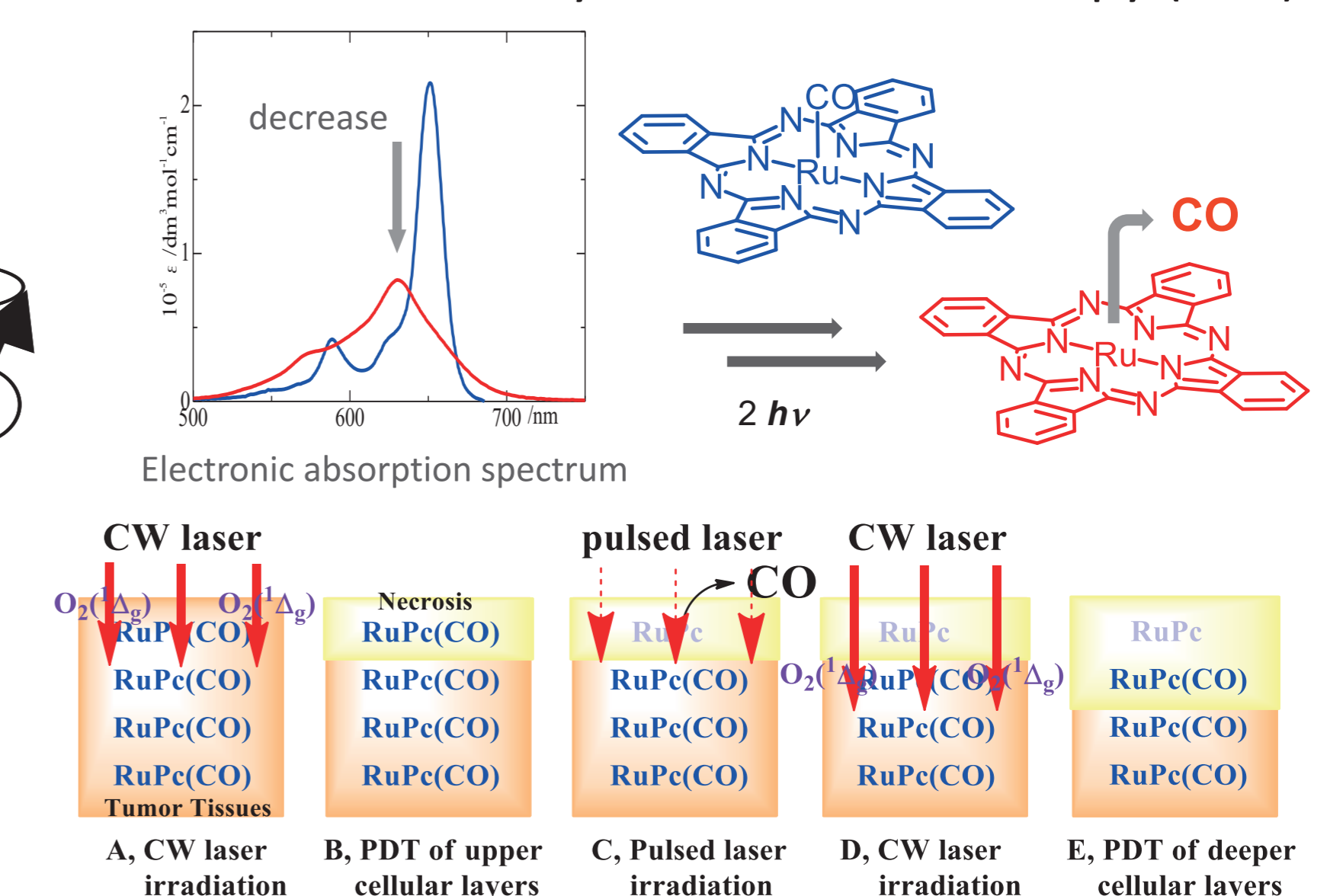
Fluorescence Bioimaging of Vitamin C in a Mouse

Spectroscopic Molecular Detections in Bacteria



Spectroscopic Observations of Cytochrome c in Bacteria

Photodynamic Cancer Therapy (PDT)



PDT of Deeper Tumor Tissues

