



HOKKAIDO UNIVERSITY

AMBITIOUS LEADER'S PROGRAM

Fostering Future Leaders to Open New Frontiers in Materials Science

Ambitious 物質科学セミナー

Functional Porphyrin Systems

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北海道大学 理学部 7号館 7-219/220

Porphyrins find widespread use as functional components in natural systems because of their outstanding redox, photophysical, photochemical, self-assembly and ligand binding properties.

This seminar will describe recent studies in our laboratory that have made use of these properties to develop: a) new sensors based on synthetic and naturally occurring porphyrins, including enzymes, integrated with silica; b) a biosensor based conductive network of crosslinked carbon nanotube/hemoglobin on a thiol-modified Au surface; c) new porphyrin dendritic arrays for use in light harvesting and in catalysis; d) tris- and tetrakis-porphyrin chemical mimics of the chromophore arrangement of the photosynthetic reaction centre (PRC) that are the closest mimics of the natural systems to be developed anywhere; e) ring-annulated porphyrins that behave as π -expanded systems and are very efficient sensitizers for energy upconversion whereby a stream of light of a given photon energy is converted into one of a higher energy.

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