

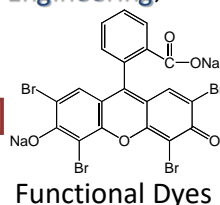
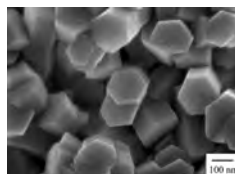
Electrodeposition of Hybrid Thin Films for Renewable Energy

Professor Tsukasa Yoshida

Electrochemical Self-Assembly of Inorganic / Organic Nano-Hybrid Thin Films

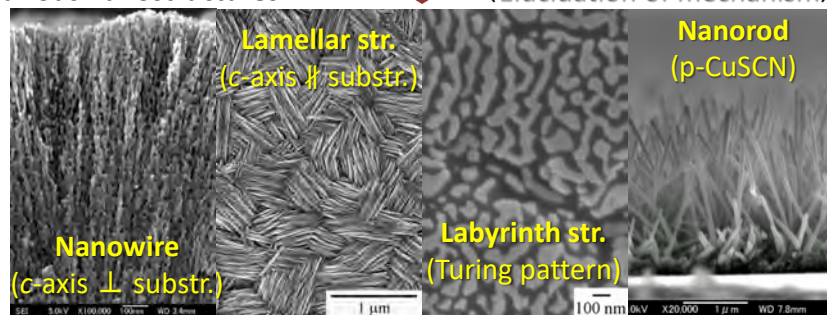


RDE system for electrodeposition
(Electrochemical Engineering)



Various nanostructures

(Elucidation of mechanism)



Next generation PVs

(New function and application)



Flexible, Colorful and See-through (Joint R&D for commercialization)
Light weight and low cost solar cells

Content:

Large scale introduction of clean and renewable solar electricity to human life is inevitable as a solution to the current environmental / energy problems. Increasing attention is paid to organic solar cells since they can be processed with low energy from abundant materials. They also bear advantages in installation and application because of their unique features such as light weight, flexibility, colorfulness and see-through appearance.

We discovered a method to electrochemically self-assemble inorganic / organic hybrid nanostructured thin films and study their applications to novel photovoltaic systems. Starting from the engineering of electrochemical apparatuses, our research interests stem diversely towards design and synthesis of novel hybrid nanostructures, elucidation of self-assembly mechanism, analysis of the structure and new functions, fabrication, testing and development of devices for commercialization together with industrial partners.

Other applications such as artificial photosynthetic system for solar fuels, energy conversion and storage, electrochromic displays and electrochemical sensors are also within our research interests.

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