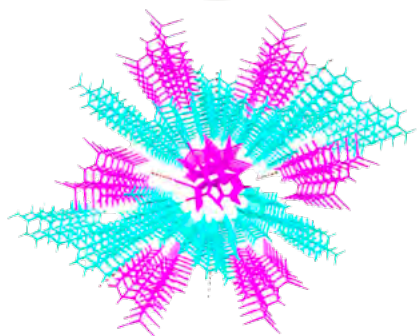


# On-demand Formation of Assemblies Based on $\pi$ -Conjugated Polymer

Associate Professor Ryohei Yamakado

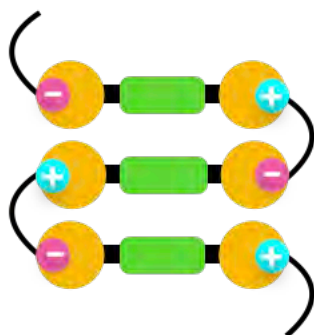
## Design and Synthesis of $\pi$ -Systems



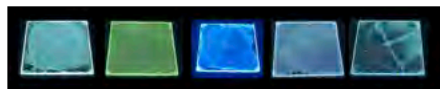
Control the Arrangement

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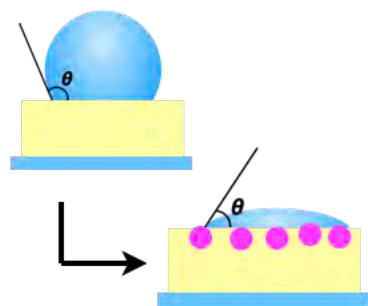
## Ion Pairs



Supramolecular Polymer



Ion Sensing



Surface Modification

**Application to various organic devices**  
Luminescent materials, Ferroelectric materials,  
Adhesive materials, Nonlinear optical materials, etc.

Content:

$\pi$ -Conjugated polymers play an important role in the organic devices, and various optical and electrical characters can be exhibited by precise molecular design. Furthermore, the construction of suitable  $\pi$ -conjugated polymer assemblies not only enhances the properties of molecules (i.e., electrical conductivity and chirality, etc.), but also enables the development of novel properties.

We aim to achieve the on-demand formation of assemblies based on  $\pi$ -conjugated polymers by controlling the intermolecular interactions, such as  $\pi$ - $\pi$  interaction, hydrogen bond, charge transfer interaction, and van der Waals interaction. In addition to the peripheral modifications of  $\pi$ -conjugated polymers by the organic synthesis, we focused on host-guest interaction to control the character of  $\pi$ -conjugated polymers. The resulting assembly is expected to be applied to highly efficient photoelectric conversion materials, ferroelectric materials, and nonlinear optical materials, etc.

Appealing point:

My group's advantage is the skill for the development of organic materials based on organic synthesis.

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Research Interest : Polymer chemistry

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