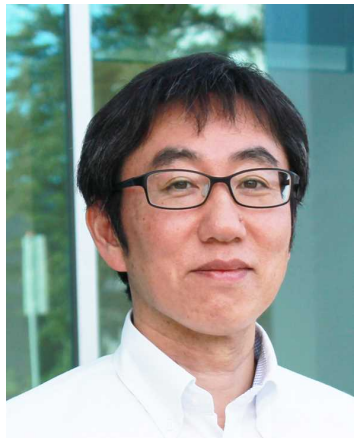
Sustainable and resilient social system for healthy nature

R&D Project Title : Development of an Auto-Sunshading System Utilizing Solar Energy



Project Leader : HIGUCHI Masayoshi, Group Leader,
Research Center for Macromolecules and Biomaterials,
National Institute for Materials Science

R&D Team : none

Summary :

Our aim is to synthesize new, colorless metallo-supramolecular polymers which become colored by electrochemical oxidation, to achieve the high coloring efficiency of 1000 cm^2/C or more, and to fabricate electrochromic (EC) smart window devices. In addition, we will develop an automatic shading system by the combination with solar cells.

Solar energy is representative renewable energy and the efficient use is expected to contribute to the realization of a new material-cycle society. However, the sunshine through windows raises the temperature of rooms in office and increases the energy consumption of air conditioning. Our goal is to reduce the energy consumption by installing the developed auto-sunshading system utilizing solar energy, in which the EC smart windows are transparent on cloudy days or in winter to warm the room by the sunshine and automatically colored on sunny days or in summer to block the strong sunshine (right figure).

https://www.nims.go.jp/fmg/index_e.html