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Dual purpose Schiff base complexes for DSSC dye and polymer flame retardant

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In recent years, social demand for solar cells is increasing gradually. Although there are several types of solar cells, such as silicon, semiconductor, organic and dye-sensitized solar cell (DSSC), modular components are generally composed of polymer materials. Indeed, to formulate safety measures during fire fighting (electric shock) as well as building fire, flame retardants for polymer materials (typically oxides or halogen compounds) should be contained in the solar cells as effective components. However, some halogen-containing organic compounds have been prohibited to use as flame retardants from the viewpoint of environmental issues. By the way, to design high performance DSSC dyes of low cost, certain metal complexes may be superior to purely organic dyes. In our previous study, electron-withdrawing substituent groups were appropriate to absorb long-wave length sunlight as well as proper tuning of redox potentials between TiO₂ semiconductor and I[/]/I³⁻ mediators. For this purpose, introducing halogen groups into Schiff base metal complexes was found to be a good strategy. Herein, we propose a concept of developing dual purpose Schiff base metal complexes (Figure).



Biography

Takashiro Akitsu has completed his PhD from Department of Chemistry, Osaka University and Postdoctoral studies from Institute for Protein Research, Osaka University. He is a Professor of Department of Chemistry, Faculty of Science, Tokyo University of Science. He has published more than 140 papers in reputed journals and has been serving as an Editorial Board Member.

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