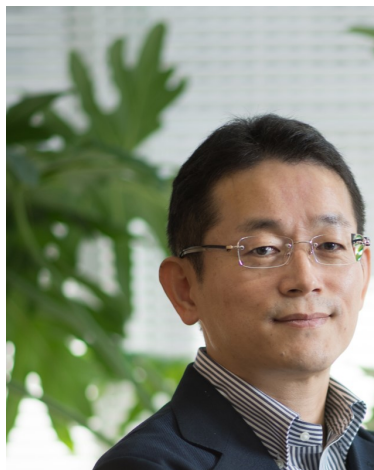


Main-Group-Rich π -Electron Materials: Design and Application



Shigehiro Yamaguchi

*Institute of Transformative Bio-Molecules (WPI-ITbM) and Department of Chemistry,
Graduate School of Science, Nagoya University, Furo, Chikusa, Nagoya 464 -8602, Japan
E-mail: yamaguchi@chem.nagoya-u.ac.jp*

Incorporation of main group elements into π -conjugated skeletons is a powerful strategy to develop new optoelectronic organic materials with unusual properties. A representative design strategy is to make the best use of an orbital interaction between a π skeleton and a main group moiety. Conformational constraint often plays a crucial role to gain an optimal orbital interaction. In addition, this is also useful to gain high chemical stability. Based on this strategy, we have so far synthesized various types of functional π -electron materials. In this presentation, we would like to report recent progress in this chemistry. Specifically, we will discuss the utilization of the Lewis acidity of the boron atom for gaining stimuli-responsive changes in fluorescence, and designs of new core skeletons that furnish near-infrared emission. We will also discuss the potential utilities of several main-group-based π -conjugated skeletons for the advanced fluorescent bioimaging.