

Project Title:

Target-oriented and Atom-economical Synthetic Strategies for Organic Electronics

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We focus on the development of efficient and target-oriented synthetic strategy in functional organic materials, particularly materials that are applicable for organic electronics and energy-related research. Although these conjugated aromatic compounds have been widely applied in the field of organic electronics, their synthetic strategies are generally based on traditional cross-coupling reactions. It is very common that the synthetic pathways are not atom-economical not efficient. On the other hand, there are many new synthetic pathways developed but never targeted on functional conjugated materials. In this project, it is very important and novel that we would like to challenge the efficient and target-oriented synthetic approach of these organic conjugated materials. The successful development of these novel synthetic methodologies would vastly improve the environmental friendliness of the organic electronic industry.

Moreover, with the assistance of RIKEN RICC, we're carrying out the theoretical study on the electronic structures (molecular orbital, energy gaps, etc) of the functional π -conjugated oligomers. However, some preliminary calculation results such as geometry optimization using DFT method have just been obtained recently and we will definitely go on the computations in order to clarify the HOMO-LUMO band gaps. Hence, we sincerely wish that RICC would extend the authorization period of my Quick-User Account to next fiscal year in order to accomplish this project and publish the results we recently obtained.