

**Report of Short-term Exchange-Student Program,  
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Fortunately, I have this opportunity to apply the researcher exchange program of Kyoto University. In this two months, we develop new organo-optoelectronic materials combining with high charge-transporting molecules as electronic donor units and remarkable electronic acceptor units for vacuum deposited small-molecule organic solar cells. The researching project in Japan show great potential for applying in the new type of organic solar cells because of novel molecular design. Before starting the synthetic work for organic materials, the TD-DFT calculations demonstrated great electronic properties in energy level to fit the common electronic acceptor such as fullerene. This useful software also helps us to estimate the light-harvesting range of new materials what we want to accomplish. The calculations can predict important information for us to prove our ideas and avoid making mistakes in molecular design. From TD-DFT calculations, we can connect quantum chemistry with the material chemistry for conducting theory into practicability. By analyzing electrochemical, photophysical properties in both of solution and solid state, the fundamental characters of these new materials were realized. Furthermore, according to the crystal structures, we discovered different results comparing with some literatures published before. This work gave us another way to set up new concept for molecular design. After finishing the synthesis and characterization, the fabrication of solar cell devices with our new materials is next step of our project. We will try to adjust different parameters in photovoltaics to enhance the performance for high power conversion efficiency in the future.

The ancient city with fascinating scenes, Kyoto, gave me awesome impression especially in the beautiful autumn with red maples everywhere in Kyoto. I feel delighted in Kyoto University with not only the amazing scenes but also all the members in the laboratory. Prof. Wakamiya who is my adviser in these two months took care me a lot and also offered me abundant resource to do the advanced research. In the end, I appreciate all the help from the members in Murata's Lab and thank Prof. Wakamiya help me get this chance to execute the Exchange-Student Program. I hope we can have further cooperation in the future.

