Dear Professor,

Herewith I would like to submit my applications for the Post-Doctor position in your research group. My research interest covers the investigation of designing efficient, stable, and non-toxic perovskite solar cells (PSCs) by using state-of-the-art density functional theory (DFT) calculations and I published 15 papers including 2 papers in Journal of materials Chemistry A (Impact factor > 9.9), 3 papers in Physical review B as the first author.

It is now clear that the fossil-fuel era is gradually coming to the end, while the renewable source of energy especially coming from the Sun Light is one of the most promising options. Developing technologies to convert solar energy into electricity remains at the center of scientific research motivated by the availability of abundant solar energy and pressed by the urgency to meet the ever-rising global energy demand due to the rapid worldwide population and economy growth. Recently, organic metal halide perovskite solar cells have emerged as one of the most promising photovoltaics because of its superior properties including strong light absorption, optimal band gap, long carrier diffusion length and low cost fabrication process, comparing to all other types of solar cells such as silicon based solar cells, thin-film semiconductors, and dye-sensitized solar cells. Motivated from those, I mainly focused on the study of the crystal, electronic, and optical properties, and intrinsic and extrinsic stabilities under humidity, and phase and chemical stability under consideration of finite temperature and pressure. Through that investigations, I revealed the mechanism of high performance PSCs, and designed efficient and stable PSCs by using DFT calculations.

I have a solid background in the area of computational materials chemistry, and thus I was fully motivated to join your research group and remarkably contribute to the development and advancement in materials science. Looking forward to your positive response.

With best regards,

Un-Gi Jong