

Faculty of Engineering

Summer Research Program 2022-2023

Project Title: Perovskite X-ray Detectors

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Objective

To fabricate an X-ray detector based on metal halide perovskites.

Project Details

X-ray detectors are required for a wide range of applications including diagnostic radiology, non-destructive testing, and security/safety systems. Mostly, amorphous selenide-based X-ray detectors are currently in use for digital X-ray detection. However, they require high X-ray dose exposures due to their extremely low sensitivities and high operating voltages across their large thicknesses to drift the carriers to the pixels. Exposure to high doses of X-rays can increase lifetime cancer risks in people. This presents a significant opportunity for us to develop the energy-efficient X-ray detectors which can detect X-rays with sensitivities far better than those of conventional detectors. Therefore, this project aims to explore metal halide perovskites as an emerging class of materials for the efficient detection of X-rays.

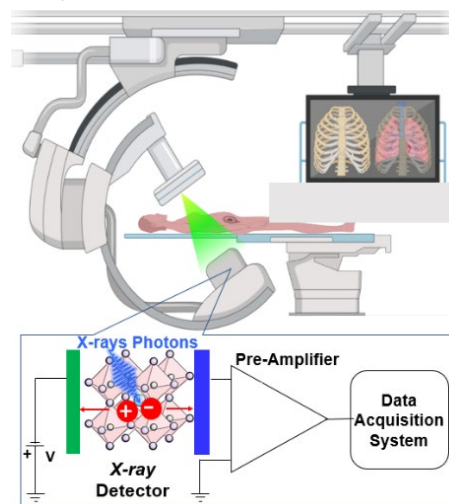


Figure 1: Schematic diagram of digital X-ray detector

Prerequisites

A background in Materials Science, Chemical Engineering, Physics/Chemistry or Electrical Engineering.