Organic–inorganic perovskite-based solar cells (PSCs) are one among the most investigated research topics worldwide due to its exceptional electro-optical properties, easily tuneable bandgap and simple fabrication process. It was recently discovered that precursor solution aging has a large impact on the overall performance of the PSC. In this work, the effect of precursor aging on methylammonium lead iodide (CH$_3$NH$_3$PbI$_3$; MAPI) and methylammonium tin iodide (CH$_3$NH$_3$SnI$_3$; MASI) was compared. It was found that the absorbance of MAPI decreases with increase in the aging time, whereas the absorbance was enhanced with time for MASI, along with a considerable change in the bandgap form 1.56 eV to 1.9 eV for MAPI.

Thin-films of MASI and MAPI after an aging time of 48 h were formed and the quality of the films were verified by high resolution X-ray diffraction (XRD) and atomic force microscopy (AFM) imaging. The results suggest that the precursor aging can be more effective in the case of MASI compared with MAPI.

Figure 1: UV–visible spectra of MAPI and MASI for different aging times.