# MXENE BASED SCHOTTKY-JUNCTIONS FOR UNASSISTED PHOTOELECTROCHEMICAL WATER SPLITTING

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The development of high performance self-powered photoelectrochemical (PEC) water splitting is greatly impacted by the screening of photoelectrodes with appropriate Fermi level difference. This work involved the merging of the Ti3C2/BiVO4 and Ti3C2/g-C3N4 based photoanodes and Ti3C2/MoS2 and Ti3C2/BiOI based photocathodes to create a dual-photoelectrode unassisted system for PEC water splitting. X-ray diffraction (XRD) and Scanning electron microscopic (SEM) analysis confirmed the structural and morphological analysis of fabricated photoanodes and photocathodes. MXene (Ti3C2) nanosheets produced distinctive Schottky junctions when combined with semiconductors (BiVO4, g-C3N4, BiOI and MoS2). These junctions modified Fermi energy levels, assisted in the separation of electron-hole pairs and increased light absorption and resulted in efficient conversion of water into hydrogen (H2) and oxygen (O2), analyzed through linear sweep voltammetry (LSV). The fabricated Ti3C2 MXene based Schottky junctions offered a base for the innovative building of dual-photoelectrode internal driven, independent of power, PEC water splitting platform with excellent performance.

**Acknowledgements**
This project has received funding from the Research Council of Lithuania (LMTLT), agreement no S-MIP-23-93.