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Research areas : Energy storage in Photocapacitors



Title of the research : Storage of solar energy by heterostructured Carbon/Silver-Metal oxides/SnS photocapacitors

Current position : MPhil. Scholar

ResearchGate : <https://www.researchgate.net/profile/Kajana-Thirunavukarasu>

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Description of current and past research:

A photocapacitor uses solar light to generate electric energy, which is directly stored by an integrated storage assembly. These devices consist of a photoanode as well as a charge storage electrode, counter electrode, and reference electrode. Previously, we reported the concept devices based on Carbon sheet/Ag₂MoO₄/SnS where both oxidative and reductive energies are effectively utilized by a single electrode in the illumination of solar energy. The core components in this device are Ag₂MoO₄/SnS heterostructured nanomaterials, in which Ag₂MoO₄ material is employed as the photoactive core of a novel photocapacitive system, to generate electrons and holes by absorbing solar radiation. The energy storage (specific capacitance) of this photocapacitor was calculated from photoelectrochemical measurements such as Cyclic Voltammetry (CV). Now we work on different nanomaterials such as, Activated carbon and Ag₂CrO₄ instead of carbon sheet and Ag₂MoO₄, respectively which are used to prepare a new type of photocapacitor.

Journal publications:

Kajana, T., Velauthapillai, D., Yohi, S., Ravirajan, P., Yuvapragasam, A., Senthilnathanan, M. Structural and Photoelectrochemical Characterization of Heterostructured Carbon Sheet/Ag₂MoO₄-SnS/Pt Photocapacitor, Journal of Photochemistry and Photobiology A Chemistry, 401 (112784), 2020. doi.org/10.1016/j.jphotochem.2020.112784