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Research areas : Dye-Sensitized Solar Cells

Title of the research : Pt- free Counter Electrodes for Dye-Sensitized Solar Cells

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Description of current and past research:

Platinum is one of the widely used counter electrodes material in Dye-Sensitized Solar Cells. Although Platinum is good catalyzing material, its weak chemical stability makes it to decompose as PtI_4 or H_2PtI_2 when brought in contact with Tri-Iodide/ Iodide electrolyte. This might be one of the reasons for stability issue in DSSCs. In order to conclude this complication, it is necessary to switch over from Platinum. I am currently working with WS_2 Quantum dots incorporated Cobalt Ferrite composites which shows good electro catalytic activity, increased active sites available for electron transport, stability, and cost- effective when compared with Platinum based DSSCs.