

Subject **[Scdt] M.Tech. Project Presentation by A.V. Sai Kumar 30th Fri. 10:30 AM**
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Zoom link:

<https://iitk-ac-in.zoom.us/j/93752229256?pwd=RFQvbDV4bGZuVjR6anFwZm42c1JZQT09>

Meeting ID: 937 5222 9256

Passcode: 250513

Dear Colleagues,

Mr. A.V. Sai Kumar, Roll no. 19104009, M.Tech. student from Electrical Engineering Department will be presenting his M.Tech. Project Report in an on-line seminar. The details are as given below.

Topic: "Study of comparative behaviour of some common organic photovoltaic devices under different spectrum of incident light"

Date: 30th July, 2021 (Friday)

Time: 10:30 AM

The zoom link for the presentation is given above.

Abstract of the M.Tech. project

The importance of harvesting Indoor light has been increasing and the technologies that can achieve it have been getting increasing attention. Organic Photovoltaics (OPV) technology is one of the good choices for Indoor light harvesting with potentially low processing cost.

In this project, the behaviour of some common OPV devices such as, P3HT:PCBM, PCDTBT:PCBM and PTB7:PCBM were studied using SILVACO Atlas simulation tool, under different spectrum of incident light including those used for indoor lighting, viz. AM1.5G, white light, warm white LED and cool white LED. The simulations were carried out with light intensity varying from 20 mW/cm² to 200 mW/cm² for solar and white light spectra; and from 100 lux to 1000 lux for indoor light, LED spectra. The performance ranking of devices under AM1.5G solar spectrum is distinctly different from the performance observed for the Indoor LED light spectra. PCDTBT:PCBM devices performed comparatively better than PTB7:PCBM devices in the warm white LED and cool white LED showing high PCE. Under AM1.5G spectrum PTB7:PCBM devices outperformed the PCDTBT:PCBM devices. P3HT:PCBM showed poorer performance under both sunlight and indoor light conditions with low PCE. Under white light, both PCDTBT:PCBM and PTB7:PCBM devices performed better with high PCE. The absorption spectra for the OPV device photoactive layer along with the device electrical characteristics result in the better performance of an OPV device under indoor light compared to solar spectrum. The results in this project confirm the potential of OPV technology to compete with other photovoltaic technologies in efficiently harvesting the indoor light.

All interested are welcome to join the presentation.

With regards

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M.Tech. Project Advisor

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