

Subject **[Scdt] M.Tech. thesis defence of M.R.C.Prem: 11 AM Sat. 10.07.2021**

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Zoom link:

<https://zoom.us/j/93752229256?pwd=RFQvbDV4bGZuVjR6anFwZm42c1JZQT09>

Meeting ID: 937 5222 9256

Passcode: 250513

Dear Colleagues

Mr. Mutta Ramesh Chandra Prem, Roll no.: 16807424, a BT-MT student from EE Department will defend his M.Tech. thesis on Saturday, 10th July. The details are as follows:

Thesis Title: "Comparison of semi-transparent organic solar cell performance with direction of illumination"

Date and time: 10th July, 2021 (Saturday) from 11 AM to 12 noon.

The thesis defence will be held over Zoom. The link is provided above.

You are welcome to join the event over zoom.

With regard

S. Sundar Kumar Iyer
EE Department
Thesis Advisor

Abstract of the thesis

Semi-transparent organic solar cells are attractive for a wide variety of applications. An example of a commercially promising application is their deployment on glass façades in high-rise buildings to help generate power during the day while also ensuring visibility across the glass panes.

In this thesis, the solar cell parameters for semi-transparent organic solar cells when illuminated from either side of the device were compared and analysed. Initially semi-transparent, inverted structure, Poly(3-hexylthiophene) and [6,6]-phenyl-C₆₁-butyric acid methyl ester blend bulk heterojunction solar cells were fabricated. The devices were characterized and analysed to highlight the difference in their performance when they were illuminated from either side.

The next step was to simulate using Silvaco Atlas TCAD simulator, the devices with structures similar to those fabricated. In conjunction with the fabricated device analysis, the simulation results helped us identify at least two reasons for the difference in device performance with the direction of illumination. One reason was the inequality in absorbance by non-active layers on either side of the photo-active layer. Another reason was the differences in recombination due to imbalance in electron and hole mobility.

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