

## [Scdt] SCDT-FlexE Centre Weekly Tuesday Seminar-23.03.2021 at 7:30 PM

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SCDT, IIT Kanpur <scdt@iitk.ac.in>

Mon, Mar 22, 2021 at 7:24 PM

To: scdt@lists.iitk.ac.in

Zoom Meeting for joining the webinar:

<https://zoom.us/j/99863678964?pwd=ZVJvdFN5T1UyQjdZbmXwS0htRUJOUT09>

Meeting ID: 998 6367 8964

Passcode: 064022

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Dear Colleagues,

I would welcome you to attend the SCDT-FlexE Centre Weekly Tuesday Seminar by our colleague Mr. Eswaran Jayaraman. The details of the seminar (to be given in webinar format) are given below:

Title: "Organic photovoltaic devices and modules built on paper substrates"

Date: 23rd March, 2021 (Tuesday)

Time: 7:30 PM to 8:30 PM

Presentation will be on zoom. The link is given above.

The talk abstract and a brief bio of the speaker are given below. Please join if you are in a position to do so.

With regards

S.K.I.

Abstract of talk sent by Mr. Eswaran Jayaraman:

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A paper-substrate polymer solar-cell process is successfully demonstrated. Commercially available paper with coating from the polyvinyl family of materials is made suitable for polymer solar-cell fabrication. Smoothing layers of polyvinyl formal (PVF) with a knife-edge coater give them an acceptable root mean square roughness of around  $2.6 \pm 0.2$  nm. Top-illuminated solar cells with blends of either P3HT or PTB7 and PCBM as photoactive layer having power conversion efficiencies up to 3.37% and 6.44%, respectively, are fabricated with area of 0.16 cm<sup>2</sup>. Power conversion efficiency (PCE) values up to 2.38 and 4.23% respectively achieved for larger module of 108 cm<sup>2</sup> active area 12 by 12 cm OPV, built on 15 by 15 cm paper substrates using P3HT:PCBM and PtB7:PCBM blends, under one sun illumination condition. Due to better spectrum matching, for 1000 lux cool-white light emitting diode (LED) illumination, the power density demonstrated is up to 12  $\mu$ W cm<sup>-2</sup> for these modules, which is comparable to 13  $\mu$ W cm<sup>-2</sup> from a (standard illumination PCE 15%) silicon PV device for the same illumination.

About the Speaker:

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Mr. Eswaran Jayaraman completed his Bachelor of Engineering (B.E.) in Mechanical from Anna university-IRTT college, then went on to do his Master of Technology (M.tech) in Nanotechnology from NIT Calicut. Currently he is working as a Project Engineer in the FlexE Centre at IIT Kanpur. His research focus is on building large area flexible polymer photovoltaic devices for practical applications.

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