



# Science and Engineering Research Board

## International Travel Support Scheme

Established through an Act of Parliament: SERB Act 2008, Department of Science & Technology, Government of India

**Mr. Sundara murthy Mopurisetty, Applicant**

### Claim Form

Application File No. - ITS/749/2016-17

#### Personal Details

**Applicant Name:** Mr. Sundara murthy Mopurisetty  
**Date of Birth:** 25-06-1981 (dd-mm-yyyy)  
**Email Address:** sundara.mopury@gmail.com  
**Gender:** Male  
**Designation:** Research Scholar  
**Department:** Electrical Engineering  
**Address:** Indian Institute of Technology Bombay, Powai,,  
 Mumbai, MAHARASHTRA, 400076  
**Mobile :** 8121884724  
**Whether (Sr. Scientist or Young Scientist):** Young Scientist  
**Name of the Event:** 43RD IEEE PHOTOVOLTAIC SPECIALISTS CONFERENCE  
**City & Duration of the Event:** PORTLAND, OREGON , UNITED STATES OF AMERICA, 05-06-2016 To 10-06-2016  
**Date of leaving India :** 03-06-2016  
**Date of return to India :** 12-06-2016  
**Passport No. :** G9664616

#### Tour Technical Details

##### Academic highlights & new developments presented at the Event (200 Words):

On first day attended a tutorial session on, "Silicon solar cell technology: Design, device physics, and characterization." Discussed device physics in crystalline silicon solar cells, design methodology and characterization techniques. Second day in session, attended the various plenary lectures on perovskite solar cells, Quantum dot solar cells and potential induced degradation in p-type c-Si solar cells. In the evening session, Oral presentations on "Advances in Chalcogenides Solar Cells" were attended. On third day, plenary sessions on "Wild Band Edges in Chalcogenide Devices, Solar Energy Forecasting." be presented. In Poster session, interacted with researchers working on Light Management, module reliability and perovskite solar cells. On Fourth day, plenary lectures on photo-luminescence studies, rooftop and space systems; few oral sessions on Characterization of c-Si and mc-Si, presented my poster and interacted with the conference colleagues and gathered feedback. On fifth day of the conference, plenary lectures on Mass production of high efficiency p-type PERC solar cell; posters on Passivation & Contact Formation, PV Field Performance and Monitoring attended. Superb platform to know huge information about trends in Photo-voltaic systems and to interact with eminent people. Thanks a lot to Department of Science and Technology, Government of India, for providing this opportunity.

##### Applicant's Contribution at the Event (200 words):

Attended tutorial classes on beginning day, plenary lectures from the best scientists around the globe, Oral and poster presentations. We presented a TCAD simulation deck for Cu<sub>2</sub>ZnSnS<sub>4</sub> (CZTS) solar cells that is calibrated to data from the best reported experimental device structure on Wednesday. The calibration is performed by matching the experimental external quantum efficiency (EQE) and current density vs. voltage (J-V) characteristics with those obtained from combined optical and electrical simulations. We used electrical and optical parameters from the literature and best reported experimental device structure. We find that using theoretically calculated extinction coefficient (k) values in the simulation leads to large discrepancy with experiment; on the other hand, experimentally measured k-values for bulk CZTS need only modest modification (at near-bandgap) in order to be able to fit the EQE data for the device-structured CZTS that we have here. Further, we studied the effect of series resistance (R<sub>s</sub>), Carrier lifetime (τ), surface recombination velocity (SRV) effect at CZTS/CdS, CZTS/Mo interface and replacement of AZO with novel materials like graphene, reduced graphene oxide (rGO). This calibrated deck can be used further for future predictive device modelling and plasmonic solar cell simulations.

##### Visits to other Scientific Institutions / Universities during participation in the Event, if any (200 words):

Visited industrial exhibition and scientific characterization tools exhibition at the conference.

#### Details of Account Holder & Bank (Please provide the signed copy of institute account details)

**Name of Account Holder \*:** Registrar  
**Bank Account Number :** 10725729128  
**Account Holder Address\*:** The Registrar, IIT  
 Bombay, Powai,  
 Mumbai-400076  
**Account Holder Email :** registrar@iitb.ac.in  
**Bank Name \*:** State Bank of  
 India  
**Branch Name \*:** IIT Powai Branch  
 IIT Main Gate,  
 Adishankaracharya  
 Marg, Powai,  
 Mumbai  
**Bank Address with city :**

State \*: MAHARASHTRA  
 PinCode \*: 400076  
 Type Of Bank Account(SB/Current/etc.) \*: Current  
 IFSC/RTGS Code of Bank \*: SBIN0001109

### Expenditure incurred By Applicant

Item Type	Ticket No.	Mode of Transport	Name of Airlines/ Trains/Bus/etc.	Name of Airlines	Amount (In Rs.)
Fare	0982117109863-864	Air	Economy	Air India/Its alliance	96209.0
Visa Fees					0.0
Registration Fees					27740.81
<b>Total</b>					<b>123949.81</b>

### Details of the Travel

Ticket No.	From Date	From Place	To Date	To Place
0982117109863-864	03-06-2016	BOM, Mumbai	05-06-2016	PDX, Portland
0982117109863-864	11-06-2016	PDX, Portland	13-06-2016	BOM, Mumbai

### Amount received from other sources:

Agency Name	Travel (In Rs.)	Visa (In Rs.)	Registration (In Rs.)
Total	0	0	0

### Claim Upload Files

CASH RECEIPT: [CASH RECEIPT](#)  
 BOARDING PASSES: [BOARDING PASSES](#)  
 ACCOUNT DETAILS: [ACCOUNT DETAILS](#)  
 REGISTRATION RECEIPT: [REGISTRATION RECEIPT](#)  
 PARTICIPATION CERTIFICATE: [PARTICIPATION CERTIFICATE](#)  
 MISCELLANEOUS UPLOAD: [MISCELLANEOUS UPLOAD](#)  
 TICKETS: [TICKETS](#)

Certified that I have attended the above international scientific event and the particular furnished above are correct. I also certify that I have not received travel grants from SERB during the last three years.

Date :

Signature of  
Applicant

Place :