



Meeting Minutes

5th MC Meeting, 4th WG Meeting StableNextSol COST Action no. MP1307

Action Title: Stable Next-Generation Photovoltaics: Unraveling degradation mechanisms of Organic and Perovskite Solar Cells by complementary characterization techniques (StableNextSol)

Venue: Lindner Hotel Gallery Central, Bratislava, Slovakia, from 21st to 22nd April 2016.

Meeting Room: Antwerpen, 3 floor

1. Welcome to participants
2. Adoption of agenda
3. Approval of minutes and matters arising of last meeting
4. Update from the Action Chair
 - a. Status of Action, including participating countries
 - b. Action budget status
 - c. STSM status and new applications
5. Promotion of gender balance and of Early Stage Researchers (ESR)
6. Update from the Grant Holder
7. Update from the COST Association
8. Follow-up of MoU objectives
 - a. Progress report of working groups
9. Scientific planning
 - a. Scientific strategy
 - b. Action Budget Planning
 - c. Long-term planning (including anticipated locations and dates of future activities)
 - d. Dissemination planning (Publications and outreach activities)
10. Requests for new members
11. Non-COST applications to the Actions
12. AOB
13. Location and date of next meeting
14. Summary of MC decisions
15. Closing



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Thursday 21st April 2016

1. Welcome of participants

The meeting started at 14:00h with the Action Chair, Dr Monica Lira-Cantu (MLC), welcoming all participants followed by the Local Organiser and Host of the meeting, Prof Maria Omastova welcoming all participants to Bratislava.

2. Update from the Action Chair. Status of the Action

MLC gave an update of the status of the MP1307 Action:

Duration of the 2nd Grant Period (GP2): MLC informed the MC Members that **GP2 will end on 30.04.2016**. MCs were informed about this change in the previous MC Meeting in Vilnius in October 2015. The Amendment to the Action Grant Agreement (AGA) to reflect this change has been signed between the COST Office and the Grant Holder. The budget for GP2 remained as initially approved.

MLC summarized the current status of the Action objectives, scientific program and challenges faced, emphasizing the fact that the Action now focuses both on OPV and Perovskites –the change in the Action name approved in Vilnius to include Perovskites is now reflected on the Action webpage and COST Office has agreed to it.

Participants: The number of participant countries has increased to a total of 29 COST countries (with the inclusion of Bosnia and Herzegovina and Norway), 2 NNC COST country (Russia and Belarus) and 3 IPC COST countries (China, Mexico and USA). Brazil has also expressed its interest in joining StableNextSol as IPC COST Country. The number of participants has increased to around 450 members from over 125 different institutions. Of the 29 COST countries, 14 are COST targeted Inclusiveness Countries.

Organizational updates:

- Dr Nieves Espinosa, WG1 leader, has a new position at UPCT in Spain at an institution participating within the Action, therefore she will remain WG1 Leader. The MCs agree.



4. Action Budget status

The recently signed Amendment to the GP2 AGA that modifies the duration of GP2 did not modify the budget allocated for the Grant Period. The Work and Budget Plan (WBP) for GP3 has just been approved by the MCs and will be signed soon by the Grant Holder and the COST Office. GP3 starts 01.05.2016 and finishes 30.04.2017.

MLC reviewed the WBP for GP3, recently approved by the MCs, emphasizing the increase in the Short Term Scientific Missions (STSM) budget to that more participants can benefit from the STSMs.

The two MC and WG meetings for GP3 will take place in Crete (Greece), 19-21 October 2016 together with a small conference, and in Lisbon (Portugal), 6-7 April 2017 together with an industrial day. The correct dates for the meeting in Lisbon (6-7 April 2017) are confirmed by the Local Organiser, Dr Ana Charas, because the dates in the WPB are not correct.

It is also noted that the Dissemination budget for the maintenance of the Action Webpage has decreased as it is only maintenance and not design, but it could be increased if more work is needed to include a database to collect experimental data especially from the Perovskite group, which is starting an experiment in the upcoming months.

5. Meetings and Conferences

MLC presented a summary of the meetings that have already taken place within the Action, as well as information about the meetings that will take place during GP3. Regarding the meeting in Greece in autumn 2016, the MCs opted for Crete as the venue in an electronic voting. Detailed information about the events in Crete (19-21 October 2016, <http://solar.teicrete.gr/>) and Lisbon will be given further on this meeting by the corresponding Local Organisers.

6. Dissemination

The StableNextSol COST Action was presented by the Action Vice-Chair, Dr Moritz Riede, in a Special Session on Selected COST (Co-operation in Science and Technology) Actions at the 18th Mediterranean Electrotechnical Conference – MELECON 2016, Intelligent & Efficient Technologies & Services for the Citizen that took place April 20th 2016 in Limassol (Cyprus). He got positive feedback from Ralph Stübner, COST Science Officer, about the number of publications, STSMs and about the meetings. Dr Stübner pointed that COST has a special interest in knowing other outputs of the Action: changes in legislation or standardisation, projects or project applications submitted led by the Action, whether the Action is involved in start-ups, etc.

Current status of the Action webpage (<http://StableNextSol.eu>) regarding scientific publications and presentations given by Action participants where the Action is acknowledged is a reflection of the information provided by MCs and Action participants. All members are encouraged to notify the Action about publications and presentations acknowledging StableNextSol. Contributors to this meeting are also reminded to provide their presentations (unless confidential) to be uploaded in the Action webpage.



7. Short Term Scientific Missions

The STSM Coordinator, Dr Koen Vandewal (KV), summarized the status of STSMs for GP2 presenting the data (approval rate, geographical spread, gender balance, etc.) for the whole period (2 calls). The goals of the STSMs, a summary of practical information and comments and remarks from the committee and management were also reviewed. Participants were reminded that scientific papers and conference presentations are expected as outcome of the work carried out in STSMs and that the Dissemination group coordinator should be informed to include them in the project webpage.

The opening date for the first call for STSMs for GP3 is yet undecided. It is agreed that the first call for STSMs in GP3 will open 29.04.2016 and will remain open until 29.05.2016. Results of the evaluation of the applications will be notified no later than 20.06.2016, so the recommended earliest start date for STSMs is 20.06.2016. It is reminded that the last travelling date for STSMs in GP3 is 30.04.2017. The MCs approve this motion.

8. STSM presentations (i)

Results achieved in STSMs finished between the previous meeting and the current one are presented by the beneficiaries. The session is chaired by KV.

- Mr Riccardo Borgani presented the results of his STSM *"Intermodulation Electrostatic Force Microscopy for the study of surface photo voltage and its degradation"*
- Dr Vilko Mandic presented the results of his STSM *"The electric compatibility of TCO and CT layers in DSSC and OPV solar cells"*
- Dr Simon Boehme presented the results of his STSM *"Pinpointing efficiency bottlenecks in perovskite thin-film solar cells"*
- Mr Yunus Yavuz presented the results of his STSM *"Fabrication and Characterization of organic solar cells with several types of phthalocyanines"*
- Dr Pavel Troshin presented the results of his STSM *"Revealing the influence of the radical and non-radical photodegradation pathways of the fullerene derivatives"*
- Mr Simon Zuefle presented the results of his STSM *"Concentrated sunlight for accelerated testing of organic solar cells"*
- Mr Xingyuan Shi presented the results of his STSM *"Combined spectroscopic and electrical probes of degradation mechanisms in high hole mobility OSCs"*

The meeting is closed for the day



Friday 22nd April 2016

9. STSM presentations (ii)

The STSM presentations sessions is resumed, chaired by KV.

- Mr Azat Akbulatov presented the results of his STSM *“Outdoor stability of hybrid perovskite solar cells based on methylammonium lead halides”*
- Dr Eva Unger presented the results of her STSM *“Thermal Admittance Spectroscopy to Characterize Age-induced Trap Formation in Organo-Metal-Halides”*
- Dr Philippe Leclère presented the results of his STSM *“Local Probing of the Photo-Carrier Lifetime by Kelvin Probe Force Microscopy and (Photo) Conductive Atomic Force Microscopy on Hybrid Solar Cells”*
- Mr Xingyuan Shi presented the results of Ms Michelle Vezie’s STSM *“Probing the energetics of charge separation”*

10. Science and Technology: Experimental

In the Science and Technology session, the Working Groups (WG) Leaders updated the status of the different experiments and ongoing activities:

Dr Nieves Espinosa (NE), WG1 Leader, presented a review on the activities carried out within the WG. OPV Stability: in alignment with the WG objectives and profiting from the DTU database, the OPV stability database from 2012 to 2015 was carried out. A webinar showing the use of the scanning tool was done and the database was filled, with contributions from over 30 researchers from different institutions. As a result of the data analysis, a scientific publication is in preparation.

Proposals for future activities: Creation of a Perovskite database focused on measurement, characterization and stability or a literature review about Life Cycle Assessment (LCA) on OPV devices. Unfortunately, for this upcoming activities the DTU database cannot be used any more since DTU is no longer taking part in the Action.

Dr Sjoerd Veenstra (SV), WG3 leader, presented the status of “Experiment 3 – Testing the test”. The goal of this experiment is to compare degradation conditions (following the ISOS protocols) using (close to) identical samples. Unfortunately, no new provider for device supplier that can manufacture the required amount of identical devices has been found after DTU left the Action. The experiment will have to be re-thought and re-designed.

Dr Harald Hoppe (HH), WG4 leader, explained the present status of “Experiment 1”. This ongoing experiment aims to compare different commercially available P3HT materials. HH summarized what has been done, problems faced and working hypothesis. HH showed results on characterization carried out at different laboratories and on degradation carried out at Ben Gurion University of the Negev in Israel. Next step within this experiment will be looking for correlations, drawing conclusions and publishing the results, in one or several papers.



Dr Yulia Galagan (YG), WG2-OPV leader, updated the participants on the status of “Experiment 4”. In this experiment, many cell producers fabricate devices (the only limitation being using PCDTBT as absorber material, the rest of device parameters, including device architecture, are decided by the manufacturer) and all devices will be degraded together. The objective of the experiments is to provide the different labs with information on how to improve and get state-of-the-art devices.

YG showed the first preliminary results obtained, as the experiment is currently ongoing. Next steps will comprise characterization and looking for correlations. A joint paper will be the outcome of the experiment.

Dr Francesca Brunetti (FB), WG2-PSC leader, launched the experimental activities on perovskite solar cells. The starting point will be a scouting for participants within the action willing to contribute (either manufacturing devices or characterizing and degrading them). A survey document will be uploaded in the Action webpage and distributed among StableNextSol members. Once the scouting is done, detailed experiments will be designed. The initial idea is to have a main experiment dealing with device fabrication and characterisation together with secondary experiments proposed by partners to do specific studies. Possible outcomes from these experiments would be: protocols on how to measure Perovskite Solar Cells (PSC), evaluation of the stability of PSCs and identification of key parameters in PSC stability evaluation, etc.

11. Upcoming meetings and other news

Local Organisers of the activities taking place in GP3 presented their activities:

Dr Kostas Petridis presented the next meeting (***Organic and Perovskite Solar Cells conference + 6th MC Meeting & 5th WG Meeting of the StableNextSol COST Action***) that will take place in Crete (Greece), 19-21 October 2016. Additional information can be found in the webpage for the activity (<http://solar.teicrete.gr/>).

Dr Ana Charas presented the second meeting for GP3 (***7th MC Meeting & 6th WG Meeting and Industrial Day***), that will take place in Lisbon (Portugal), 6-7 April 2017.

MC Members also presented activities organised within their institutions:

Dr Francesca Brunetti presented the *10th Edition of the International School of Hybrid and Organic Photovoltaics (ISOPHOS 2016)*, that will take place 11-15 September 2016 in Italy.

Prof Eugene Katz presented the *20th SedeBoqer Symposium on Solar Energy Production*, which will take place 26-28 September at the Sede Boqer and Beer Sheva campuses in Israel.

12. Closing

MLC closes the meeting. Next MC and WG meeting will take place in October in Crete.

