Contribution ID: **89** Type: **Poster**

Investigation of radiation exposure on organic solar cell for space application

Tuesday, 5 December 2023 14:00 (3 hours)

As space technologies and space missions develop rapidly, the demand for solar cells dedicated to space applications is increasing. Space solar cells face more critical challenges than before. Higher gravimetric Power Density and better radiation resistance are the primary keys. This project aims to investigate the degradation of organic solar cells in the space environment. Based on previous work regarding deploying Organic Solar Cells (OSC) in space on a suborbital rocket, we work on long-term experiments to study the degradation mechanisms in space. For that, we do space environmental simulations on the ground to prepare for long-term experiments in orbit. The main objective is to emulate significant parameters that can reduce the performance of our cells. Organic solar cells used in space exploration devices are mainly exposed to Radiation, which causes damage to the morphological and chemical structure of the organic bulk heterojunction through ionization. It is, therefore, interesting to study the impact of ionising radiation to evaluate the possibilities and prospects for optimising the performance of solar cells in space. A gamma-ray radiation test is conducted to investigate the morphology changes at different total ionizing doses. This will give us a clear idea of how space radiation will affect the structure of our OSCs and how we can reduce radiation damage.

Primary author: AZZOUNI, Tarek (Technical University of München)

Co-authors: SPANIER, Lukas; MÜLLER-BUSCHBAUM, Peter (TU München, Physik-Department, LS Funktionelle Materialien); HUTANU, Vladimir; Dr LI, Xiaosong (TUM/FRM II)

Presenter: AZZOUNI, Tarek (Technical University of München)

Session Classification: Poster Session

Track Classification: Material Science