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Solar cell evaluation using electron beam induced current with the large chamber scanning electron microscope TARA WINK, EDWARD KINTZEL, Western Kentucky University, PETER MARIENHOFF, MARTIN KLEIN, Ellcie Maintenance GmbH — An initial study using electron beam induced current (EBIC) to evaluate solar cells has been carried out with the large chamber scanning electron microscope (LC-SEM) at the Western Kentucky University Non-destructive Analysis Center. EBIC is a scanning electron microscope technique used for the characterization of semiconductors. To facilitate our studies, we developed a Solar Amplification System (SASY) for analyzing current distribution and defects within a solar cell module. Preliminary qualitative results will be shown for a solar cell module that demonstrates the viability of the technique using the LC-SEM. Quantitative EBIC experiments will be carried out to analyze defects and minority carrier properties. Additionally, a well-focused spot of light from an LED mounted at the side of the SEM column will scan the same area of the solar cell using the LC-SEM positioning system. SASY will then output the solar efficiency to be compared with the minority carrier properties found using EBIC.

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