

Abstract Submitted
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Modeling the Energy Dependent Cathodoluminescent Intensity of a Carbon Composite Material JUSTIN CHRISTENSEN, KELBY PETERSON, JUSTIN DEKANY, JR DENNISON¹, Utah State University, MATERIAL PHYSICS GROUP TEAM — The energy dependent spectral radiance from a carbon composite material under energetic (0.5-30 keV) electron bombardment was measured using visible-NIR cameras. Observed trends could not be accurately modeled using either a thin-film (penetrating electron) model which decreases with increasing electron energies or a bulk (non-penetrating electron) model which increases with increasing energies. However a linear combination of the two models, modeling thick and thin regions of luminescent polyimide above carbon particles was found to fit observed results much better. Electron microscope images of the sample were analyzed to independently determine the ratio of thick/thin sample areas which was found to reasonably match the ratio predicted by the cathodoluminescent model. A potentially more accurate model is also discussed, which uses distributions of dielectric thicknesses and incident electron energies.

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