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| **Abstract:** |  |
| Abstract— This research replaces conventional hole transport layers (HTLs) like Spiro-OMeTAD, with Cu-based delafossite materials for improved performance. CsSnI₃ and CsPbI₃ were used as absorber layers to enhance perovskite solar cells (PSCs) stability. Various PSCs were optimized by adjusting perovskite thickness, HTL thickness, and temperature to determine their influence on efficiency. The results were examined to determine the highest-performing PSC, offering insights into stable and cost-effective solar cell designs for better energy harvesting. | |