

Abstract Submitted
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Analysis of Folded Geometry for Organic Solar Cells¹ ARIC MEYER, JAEWOOK SEOK, HARALD ADE, North Carolina State University — Organic solar cells offer promise of clean affordable energy due to their potential for low cost, ease of production, and flexibility. Unfortunately practical implementation is prevented by lower power conversion efficiencies and shorter device lifetimes compared to inorganic photovoltaics. Many techniques are being investigated to improve the efficiency of organic solar cells beyond current limits of 5-6%. Recent work has demonstrated that folding a flat organic solar cell can be an effective way to improve power conversion efficiency; however, efficiency gains range from 20-100% depending on the details of the system. This theoretical work details the parameters affecting potential gains from a folded geometry. Results include guidelines for predicting which materials and device structures stand to benefit most from folding, and showing that some materials which cannot reach high efficiencies in a planar geometry can be competitive when in a folded solar cell.

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