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Informatic Strategies for Screening Electron Mobility of Candidate Semiconducting Materials¹ KIM FERRIS, Pacific Northwest National Laboratory, DUMONT JONES, Proximate Technologies, LLC. — While carrier transport properties are critical to semiconductor efficiency, screens for potentially new materials based upon mobility measurements can be problematic. In the early stages of materials development, measured electron mobilities are often unreliable indicators of their eventual performance and serve as a poor basis to assess the longer term potential of candidate materials. In this paper, we describe an information-based approach for estimating an effective upper limit, using the specific case of the II-VI semiconductors. The optical (polaron) electron mobility has been developed as a screening property, supported by informatic estimates of dielectric properties. This mobility represents a practical screen, providing an estimate of the potential bounding value at room temperature. Using this basis, partial screening criteria based on compositional factors can also be constructed.

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