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Electrical Characteristics of an Aluminum: Trans- (Ch)_x Photodiode and Possible Defect-Related Current Transport

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ELECTRICAL CHARACTERISTICS OF AN ALUMINUM:
trans-(CH)_x PHOTODIODE AND POSSIBLE DEFECT-RELATED
CURRENT TRANSPORT

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Abstract. We have measured the electrical characteristics of photodiodes made by vacuum deposition of aluminum onto fibrous trans-(CH)_x. The trans-(CH)_x was not intentionally doped. The polymer surface was rough, so the Al overlayers were irregular. They were thick, to have low resistance, and had gaps that allowed some light into the junction. A simple equivalent circuit was fitted to the dark and illuminated current-voltage characteristics. The room temperature diode quality factor, n , was 1.9 for the junction in this circuit. This result is consistent with several mechanisms for the forward diode current, including that of charge carrier recombination at defects in the junction space charge region of the trans-(CH)_x.