

Abstract Submitted  
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**The Kinetics of Tin Whisker Growth**<sup>1</sup> EMILY MITCHELL, CHAD RODEKOHHR, Presbyterian College — Tin whiskers are single-crystalline structures that grow out of tin rich surfaces. Whiskers are found to grow most notably on thin tin surfaces, such as those deposited via electroplating or sputtering [2]. Tin whiskers are highly conductive and pose a threat to many systems, specifically in computers. Whiskers can cause short circuits and bring about malfunctions in products ranging from satellites to pacemakers [3]. Much is lacking in the understanding of their growth mechanisms, however, many researchers agree that stress is a necessary factor. This research aims to evaluate the necessary components of tin whisker growth. We hypothesize that stress and nucleation points are the critical features that must be present for whiskers to form. Previous research found that chemical etching stimulates whisker growth and we hypothesize that this etching introduces nucleation points. The mathematics behind the growth kinetics are an extension of Dr. Smetana's work and describe an energetically favorable argument for proposed mechanisms [8]. Through the understanding of why whiskers grow, we hope to control the location, orientation, and time of whisker growth. These abilities will enable us to stop harmful whisker growth and implement whisker applications such as in the MEMS field.

<sup>1</sup>SC-INBRE

Emily Mitchell  
Presbyterian College

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