

Western Illinois University
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Abstract

Recorded Scholarly Presentation

Major: Chemistry

Faculty Mentor: Brian Bellott

The Use of Formaldehyde to Treat Biological Samples in Preparation of Scanning Electron Microscopy

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Our primary goal with this project is to prepare biological samples to be analyzed using scanning electron microscopy. However, one of the major drawbacks of scanning electron microscopy for many samples is that the sample chamber must be under a vacuum to allow the electron beam to travel to the sample surface. Due to the pressure of this chamber, the samples will collapse, and they cannot be analyzed properly in that condition. In order for the biological samples to be viewed properly under a scanning electron microscope they must be treated first. This treatment process is typically referred to as fixing. The process has several steps. First all the water in the sample must be removed without damaging the sample. Then the structures within the sample have to be treated so they don't collapse. Finally, most biological samples are insulators, meaning they cannot be easily imaged using an SEM. To help with this problem the samples will then be coated with a thin layer of conductive metal. The goal is to use formaldehyde as a successful fixative. Being able to successfully use this as a fixative will allow us more options when it comes to treating samples for scanning electron microscopy. Scanning electron microscopy is a great tool to have and be able to use as it allows for greater magnification, resolution, and a greater depth of field. The goal for this project is to have a perfected treatment plan by the end of the semester.