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Measurement of Silver Nanoparticles on Periodically Poled Lithium Niobate (PPLN) Surfaces¹ SARAH EARL², JAMES PERKINS, DONG WU, J.E. (JACK) ROWE, NC State University — Atomic force microscopy (AFM) was used to measure the size and shape of silver nanoparticles which were deposited photochemically on PPLN surfaces. These nanoparticles form patterns of nanowires on PPLN surfaces which may be useful in new applications. Metallic nanowires are necessary for the advancement of nanoscale devices, and better methods of fabricating these wires are needed. An AFM uses a cantilever that moves across a given surface to provide measurements on the size and shape of nanoscale features on a surface. The AFM used was calibrated using a standardized grating sample. Different tips were analyzed to determine the best tip for imaging. AFM was then applied to the PPLN surfaces. PPLN consists of striped (positive and negative) domains that are between 10 and 14 micrometers in width. Silver nanowires, typically about 65nm in width, can be formed by depositing silver in aqueous solution under ultraviolet light on PPLN surfaces. The nanowires form along the edges or boundaries of these domains. Multiple PPLN samples of different deposition times are analyzed. These samples are compared by measuring the volume of silver in the wires and by measuring the amount of silver deposited on the different domains.

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