Effects of Negative Ag Ions on the Surface of (100) Single-Crystalline MgO Substrates

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Negative silver ions with energies between 200 eV and 700 eV are produced and extracted to process single crystal MgO samples using a plasma sputter-type negative ion source [1]. Added parameters include 0.5A and 1.5A discharge current, 35-55 V discharge voltage and 30 and 60 minutes processing time. X-ray diffraction measurements and energy dispersive x-ray spectrometer results reveal that samples processed using 200 eV and 500 eV ion energies exhibited deposition of silver while the sample bombarded with 700 eV ion energy showed signs of surface modification that led to amorphization. Simulated XRD curves establishing the deformed lattice of silver provide a good fit when superimposed with the sample bombarded with 200 eV ion energy under 40 V discharge voltage, 0.5 A discharge current and 30 minutes processing time.