

Thin films of molybdenum oxide were deposited in vacuum by pulsed laser ablation using a xenon fluoride (351 nm) and a krypton fluoride (248 nm) excimer lasers. The films were deposited on unheated substrates and were post-annealed in air in the temperature range 300-500 °C. The structural, morphological, chemical, and optical properties of the films were studied. As-deposited films were found to be dark. The transparency of the films was improved with annealing in air. The films were polycrystalline with diffraction peaks that belong to the orthorhombic phase of MoO₃. The surface morphology of the films showed a layered structure. Both the grain size and surface roughness increased with the annealing temperature. The stoichiometry of the films improved upon annealing in air, with the best stoichiometry of MoO_{2.95} obtained for films deposited by the XeF laser and annealed at 400 °C. Similarly, the best transparency, with a transmittance exceeding 80 %, was obtained with the films annealed in the temperature range 400 – 450 °C.