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Research note

## The effect of oxygen flow rate on refractive index of aluminum oxide film deposited by electron beam evaporation technique

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### Abstract

The effects of oxygen flow rate on refractive index of aluminum oxide film have been investigated. The  $\text{Al}_2\text{O}_3$  films are deposited by electron beam on glass substrate at different oxygen flow rates. The substrate was heated to reach  $250^\circ\text{C}$  and the temperature was constant during the thin film growth. The transmittance spectrum of samples was recorded in the wavelength 400-800 nm. Then, using the maxima and minima of transmittance the refractive index and the extinction coefficient of samples were determined. It has been found that if we reduce the oxygen flow, while the evaporation rate is kept constant, the refractive index of  $\text{Al}_2\text{O}_3$  films increases. On the other hand, reduced oxygen pressure causes the  $\text{Al}_2\text{O}_3$  films to have some absorption.

**Keywords:** aluminum oxide film, extinction coefficient, refractive index

For full article, refer to the Persian section