

**RADIATIVE PROPERTIES TAILORING OF MICROSCALE GRATING WITH
COMB-DRIVE MICROACTUATOR**

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ABSTRACT. Micro-scale grating structures are widely researched in recent years. Although micro-scale fabrication technology is highly advanced today, with grating aspect ratio greater than 25:1 being achievable some fabrication requirements, such as fine groove processing, are still challenging. Comb-drive microactuator is proposed in this paper to be utilized on simple binary grating structures for tailoring or modulating spectral radiation properties by active adjustment. The rigorous coupled-wave analysis (RCWA) is used to calculate the absorptance of proposed structures and to investigate the impacts brought by the geometry and displacement of comb-drive microactuator. The results show that the utilization of comb-drive microactuator on grating improves the absorptance of simple binary grating while avoiding the difficulty fine groove processing. Spectral radiation property tailoring after gratings are fabricated becomes possible with the comb-drive microactuator structure.