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SCATTERING TRANSMISSION FIELD OF A PHOTONIC CRYSTAL SURFACE WAVE TO DETERMINE THE THICKNESS DISTRIBUTION OF THIN FILMS

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In present work, we use an electromagnetic surface mode excited at the interface of a finite one-dimensional photonic crystal utilizing a modified attenuated total reflection setup by capturing the images formed by the scattered surface waves under transmission, to determine the thickness distribution of a non-uniform thin film (<100 nm) over an extended millimeter-sized area. The sensitivity of the proposed technique is analyzed by considering a step coating that presents two different regions of different thickness, which shifts the resonant conditions of the surface mode.