

" STUDY AND FABRICATION OF MICROCAVITY BASED ON POROUS SILICON MULTILAYER",

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TÓM TẮT:

We present the new results in wavelength-selective characteristics of 1D photonic microcavity based on porous silicon. Those properties are studied in both experimentation and simulation. The 1D photonic crystals are fabricated by an electrochemical etching of a silicon wafer with timely repeat steps of applied current densities. The simulation is relying on the Transfer Matrix Method (TMM) to design and predict the optical properties of 1D photonic crystals and photonic microcavity as well as the relation between anodization parameters with reflection spectra. The obtained results show that the elaborated porous silicon photonic crystals have the wavelength-selective property in a controllable range of 540 - 768 nm, and reflectivity of about 70-85%. We have grown cavity structures of 20 stacked layers and the Full-Width-Half-Maximum (FWHM) of cavity is 20nm, centered at 643.27nm. Suitability between spectral characteristics from those photonic crystals and cavity and simulations has been found