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The large full band gaps for photonic crystals in two dimensions HAN KUEI FU, YANG FANG CHEN, Department of Physics, National Taiwan University, R. L. CHERN, CHIEN. C. CHANG, Institute of Applied Mechanics, National Taiwan University, INSTITUTE OF APPLIED MECHANICS, NA-TIONAL TAIWAN UNIVERSITY COLLABORATION — The large full band gaps of two-dimensional photonic crystals have been designed, fabricated, and characterized. The design of photonic crystals was based on the calculation using the inverse iteration with multigrid acceleration. The fabrication of the photonic crystals on silicon was realized by the processes of electron-beam lithography and inductively coupled plasma reactive ion etching. It is found that the hexagonal array of circular columns and rods have the optimal full photonic band gaps. In addition, a large extraction of light from our designed two- dimensional photonic crystals was obtained when compared with that of the frequently used photonic crystals with triangular lattices.

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