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The Impact of Geometry on the TM PBGs of Photonic Crystals and Quasicrystals LIN JIA, MIT, ION BITA, Qualcomm MEMS Technologies, EDWIN THOMAS, Rice University — Here we demonstrate a novel quantitative procedure to pursue statistical studies on the geometric properties of photonic crystals and photonic quasicrystals (PQCs) which consist of separate dielectric particles. The geometric properties are quantified and correlated to the size of the photonic band gap (PBG) for wide permittivity range using three characteristic parameters: shape anisotropy, size distribution, and feature-feature distribution. Our concept brings statistical analysis to the photonic crystal research and offers the possibility to predict the PBG from a morphological analysis.

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