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Abstract for an Invited Paper
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Aneesur Rahman Prize for Computational Physics Lecture: Photonic Crystals and Genetic Algorithms: Adventures of a Computational Physicist¹

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I will review some of our work in the computation of photonic crystals, focusing on our discovery of the photonic band gap in diamond structures. I will also describe our conception of the cut-and-paste genetic algorithm in materials discovery structure search and discuss applications of the algorithm from early studies of atomic clusters geometries to more recent applications for structures of surfaces, interfaces, nanowires, and bulk crystals.

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