

## Evaluation of phonon coherence and coherent transport in phononic crystal

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Phononic crystal has been paid much attention as advanced structuring for manipulating phonon transport. The peculiar thermal property of PnC is that PnC has intrinsically small thermal conductivity comparable to amorphous while remaining crystalline. However, actual PnC crystal in experiment does not show such intriguing thermal property since phonon does not preserve its coherence (phase information) due to disorder of structural periodicity, surface roughness, and anharmonicity. In order to realize the low-coherence-loss PnC, it is necessary to investigate the phonon coherence and get insight into the knowledge on the coherence-loss mechanism. In this conference, we present recent results for phonon coherence length, and heat conduction in actual PnC with holes involving coherent and incoherent phonons.