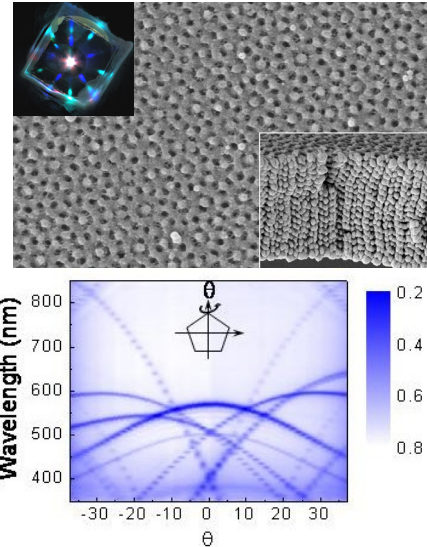


Icosahedral quasicrystals for the visible wavelengths by optical interference holography

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We report the fabrication of icosahedral quasicrystals using a holographic lithography method for the visible range. The icosahedral pattern, generated using a novel 7-beam optical interference holography,^[1] is recorded on photoresists and holographic plates. Electron micrographs of the photoresist samples (top figure) show clearly the symmetry of the icosahedral quasicrystals, while the holographic plate samples (diffraction pattern shown in the top-left inset) exhibit bandgaps in the visible range (bottom figure). Calculations of the bandgaps due to reflection planes inside the icosahedral quasicrystal show good agreement with the experimental results.



- [1] W. Y. Tam, *Appl. Phys. Lett.* to appear;
<http://arxiv.org/ftp/physics/papers/0609/0609032.pdf>.