

## Strong Circular Dichroism from Chiral 3D Photonic Crystals

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Chiral photonic crystals allow for photonic stop bands for circularly polarized light connected with pronounced circular dichroism<sup>1,2</sup> which can potentially be used for applications, e.g., as compact “thin-film” optical diodes<sup>3</sup>.

We have fabricated high-quality polymeric 3D spiral photonic crystals<sup>4,5</sup> *via* direct laser writing<sup>5,6</sup>. The measured transmittance spectra of these low-index contrast structures reveal spectral regions where the transmittance is below 5 % for one circular polarization and larger than 95% for the other – for just eight lattice constants along the propagation direction<sup>1</sup>. These polarization stop bands occur if the pitch of the light spiral matches the pitch of the dielectric spiral. As expected from the symmetry, the transmittance spectra are closely similar if both the sense of rotation of the dielectric spirals and that of the incident light field are changed simultaneously. Our experimental results agree well with theory.

Additionally, we present a novel chiral 3D layer-by-layer structure as an alternative to the discussed circular dichroitic 3D spiral photonic crystals.

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