# Rigorous Coupled-Wave Algorithm (RCWA) for 3D metamaterials

This MATLAB code is written by Rushin Contractor. It can simulate the reflection, transmission and field distribution caused due to the diffraction of light from 3D metamaterial grating structures. The implementation of the RCWA is based on the following papers:

M. G. Moharam and T. K. Gaylord, “Rigorous coupled-wave analysis of planar-grating diffraction,” J. Opt. Soc. Am.

**71**, 811-818 (1995).

L. Li, “New formulation of the Fourier modal method for crossed surface-relief gratings,” J. Opt. Soc. Am. A **14**,

2758-2767 (1997).

L. Li, “Formulation and comparison of two recursive matrix algorithms for modeling layered diffraction gratings,” J.

Opt. Soc. Am. A **13**(5), 1024-1035 (1996).

In order to illustrate its use, we generate Figs. 2, 4, 8a, and 9c from “Ultra-broadband, polarization-independent, wide-angle absorption in impedance-matched metamaterials with anti-reflective moth-eye surfaces” by R. Contractor, G. D’Aguanno, C. Menyuk, Optics Express.