Experimental demonstration of water based tunable metasurface

A simple dynamically tunable metasurface (two-dimensional metamaterial) operating at microwave frequencies is developed and experimentally investigated. Conceptually, the simplicity of the approach is granted by reconfigurable properties of unit cells partially filled with distilled water. The transmission spectra of the metasurface for linear and circular polarizations of the incident wave were experimentally measured under the metasurface rotation around a horizontal axis. The changes in the transmission coefficient magnitude up to 8 dB at 1.25 GHz are reported while rotating the metasurface by the 90 degrees angle. The proposed approach manifests the cheap and accessible route for the electromagnetic wave control in the microwave region with the help of metasurfaces. Published by AIP Publishing.