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Active Spectral Absorption Control in a Tunable Liquid Crystal/Metamaterial Structure by Polarization Plane Rotation

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We present theoretical studies conducted on the newly-introduced controllable metamaterial – liquid crystal system. Our model consists of a standard metamaterial single cell split ring resonator array with dimensions tailored to match a desired frequency in the infrared frequency regime, with an added liquid crystal layer, in order to control the refractive index surrounding the resonator array. We show that this type of system can show controllable spectral absorption in the desired range, making them suitable for a range of optical applications.