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Title:A tunable hybrid metamaterial absorber based on vanadium oxide films

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Abstract:A tunable hybrid metamaterial absorber (MA) in the microwave band was designed, fabricated and characterized. The hybrid MA was realized by incorporating a VO₂ film into the conventional resonant MA. By thermally triggering the insulator-metal phase transition of the VO₂ film, the impedance match condition was broken and a deep amplitude modulation of about 63.3% to the electromagnetic wave absorption was achieved. A moderate blue-shift of the resonance frequency was observed which is promising for practical applications. This VO₂-based MA exhibits many advantages such as strong tunability, frequency agility, simple fabrication and ease of scaling to the terahertz band. © 2012 IOP Publishing Ltd.

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