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Abstract:We have designed, fabricated, and characterized metamaterial enhanced bimaterial cantilever pixels for far-infrared detection. Local heating due to absorption from split ring resonators (SRRs) incorporated directly onto the cantilever pixels leads to mechanical deflection which is readily detected with visible light. Highly responsive pixels have been fabricated for detection at 95 GHz and 693 GHz, demonstrating the frequency agility of our technique. We have obtained single pixel responsivities as high as 16,500 V/W and noise equivalent powers of 10-8 W/Hz/2 with these first-generation devices.
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