294. Title:Continuous-wave terahertz digital holography by use of a pyroelectric array camera
Authors:Ding, Sheng-Hui (1); Li, Qi (1); Li, Yun-Da (1); Wang, Qi (1)
Source title:Optics Letters
Abbreviated source title:Opt. Lett.
Volume:36
Issue:11
Issue date:June 1, 2011
Publication year:2011
Pages:1993-1995
Language:English
Document type:Journal article (JA)
Abstract:Terahertz (THz) digital holography is realized based on a 2:52 THz far-IR gas laser and a commercial 124 × 124 pyroelectric array camera. Off-axis THz holograms are obtained by recording interference patterns between light passing through the sample and the reference wave. A numerical reconstruction process is performed to obtain the field distribution at the object surface. Different targets were imaged to test the system's imaging capability. Compared with THz focal plane images, the image quality of the reconstructed images are improved a lot. The results show that the system's imaging resolution can reach at least 0:4mm. The system also has the potential for real-time imaging application. This study confirms that digital holography is a promising technique for real-time, high-resolution THz imaging, which has extensive application prospects.