356. Title:Characteristics of gadolinium oxide nanoparticles as contrast agents for terahertz imaging

Authors:Lee, Dong-Kyu (1); Kim, Hyeongmun (1); Kim, Taekhoon (2); Cho, Byungkyu (2); Lee, Kwangyeol (2); Son, Joo-Hiuk (1)

Source title:Journal of Infrared, Millimeter, and Terahertz Waves
Volume:32
Issue:4
Issue date:April 2011
Publication year:2011
Pages:506-512
Language:English
Document type:Journal article (JA)

Abstract:For the application of gadolinium oxide (Gd2O3) nanoparticles as terahertz contrast agents, their optical properties in a solvent were studied using terahertz time-domain spectroscopy. The power absorption and refractive index of the samples were measured with various concentrations of nanoparticles. The power absorption was extremely large, as much as three orders of magnitude higher than that of water, so that a few ppms of Gd2O3 nanoparticles were distinguished in terms of their power absorption capacity. The results show that the interaction between the terahertz electromagnetic waves and the Gd2O3 nanoparticles is strong enough to allow their exploitation as contrast agents for terahertz medical imaging.