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Ferromagnetic Resonance on Micro- and Nanoferrites in Millimeter Waves KONSTANTIN KOROLEV, Tufts University, JOHN MCCLOY, Glass and Materials Science Team, Pacific Northwest National Laboratory, Richland, WA, USA, MOHAMMED AFSAR, Tufts University, TUFTS UNIVERSITY TEAM, GLASS AND MATERIALS SCIENCE TEAM TEAM, EXTREMELY HIGH FREQUENCY MEDICAL AND TECHNICAL ASSOCIATION TEAM — Complex magnetic permeability and dielectric permittivity of micro- and nano-sized powdered barium ferrite ($BaFe_{12}O_{19}$) and strontium ferrite ($SrFe_{12}O_{19}$) have been studied in a broadband millimeter wave frequency range for the first time. Transmittance measurements have been performed using a free space quasi-optical millimeter wave spectrometer, equipped with a set of high power backward wave oscillators. Backward wave oscillators have been used as sources of tunable coherent radiation at each individual Q-, V- and W- frequency bands. Real and imaginary parts of dielectric permittivity for both types of micro- and nanoferrites have been calculated using analysis of recorded high precision transmittance spectra. Frequency dependences of the magnetic permeability have been obtained from Schlömann's equation for partially magnetized ferrites. Tunable millimeter wave absorber, based on micro- and nano-sized powdered ferrite materials is presented.

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