

## Developments of Multi-Extreme Terahertz ESR System at Low Temperature

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Recent developments of multi-extreme terahertz ESR in Kobe will be presented. Our system covers the frequency region between 0.03 and 7 THz and the temperature region between 1.8 and 300 K.<sup>1</sup> This system can be combined with multi-extreme conditions such as the pulsed magnetic field up to 55 T<sup>2</sup> and the high pressure up to 1.4 GPa using the transmission type piston cylinder pressure cell.<sup>3</sup> As an example, terahertz ESR results of multiferroic material CuO at low temperature will be shown. Finally another development of a highly-sensitive micro-cantilever terahertz ESR system at low temperature using a torque method will be also discussed.<sup>4</sup>

<sup>1</sup>H. Ohta, et al., J. Phys. Soc. Jpn. **72**, Supplement B 26 (2003).

<sup>2</sup>H. Ohta, et al., J. Phys.: Conf. Series **51**, 611 (2006).

<sup>3</sup>T. Sakurai, et al., J. Phys.: Conf. Series **215**, 012184 (2010).

<sup>4</sup>H. Ohta and E. Ohmichi, Appl. Magn. Reson. **37**, 881 (2010).