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Title:Dielectric relaxation of HCl and NaCl solutions investigated by Terahertz time-domain spectroscopy

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Abstract:We have used Terahertz time-domain spectroscopy (THz-TDS) to investigate the complex dielectric function of water solutions containing different ions. Using HCl and NaCl solutions with different concentrations we study the changes of the dielectric response introduced by the ions. We find a linear increase of the real and imaginary part of the dielectric function compared with pure water with increasing ion concentrations. We use an expanded model for fitting the dielectric function based on a combination of a Debye relation and damped harmonic oscillators for the anions and cations. A good agreement between the model and the experimental results is obtained. © Springer Science+Business Media, LLC 2012.

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