

# **An empirical correction to multiple scattering in super heterodyne Doppler velocimetry and new determination of the concentration dependence of the electrophoretic mobility in charged particle solutions**

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An empirical correction scheme for Doppler spectra with multiple scattering contributions is introduced. It is applied to measurements of the electrophoretic mobility of low salt colloidal suspensions. For the first time, we have been able to measure the mobility over a sufficiently large range of concentrations to capture the full characteristic behaviour. We find that with increasing charged particle concentration the mobility first shows logarithmic increase, then a plateau, then a logarithmic decrease. The latter decrease is understood as resulting from counter-ion screening and the plateau is attributed to residual ion concentrations and charge renormalization. The initial counter-intuitive increase of mobility with increasing concentration remains to be explained.