

Phase diagram, structure and rheology of boehmite dispersions: role of electrostatic interactions

Maria Dronova^{a,b}, Eric Lécolier^{a*}, Loïc Barré^a and Laurent J. Michot^b

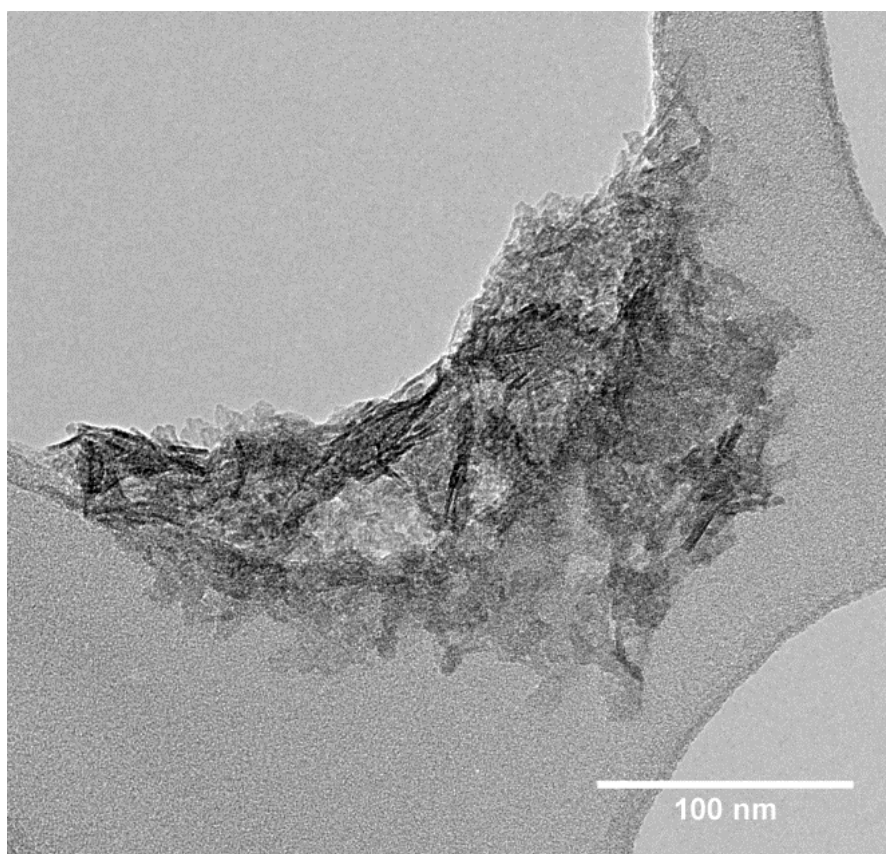
^aIFP Energies nouvelles, 1 & 4, Avenue de Bois-Préau, 92852, Reuil-Malmaison, FRANCE

^bLaboratoire PHENIX, CNRS-Sorbonne Université UMR8234, 4, place Jussieu, 75005 Paris, FRANCE

Supplementary material

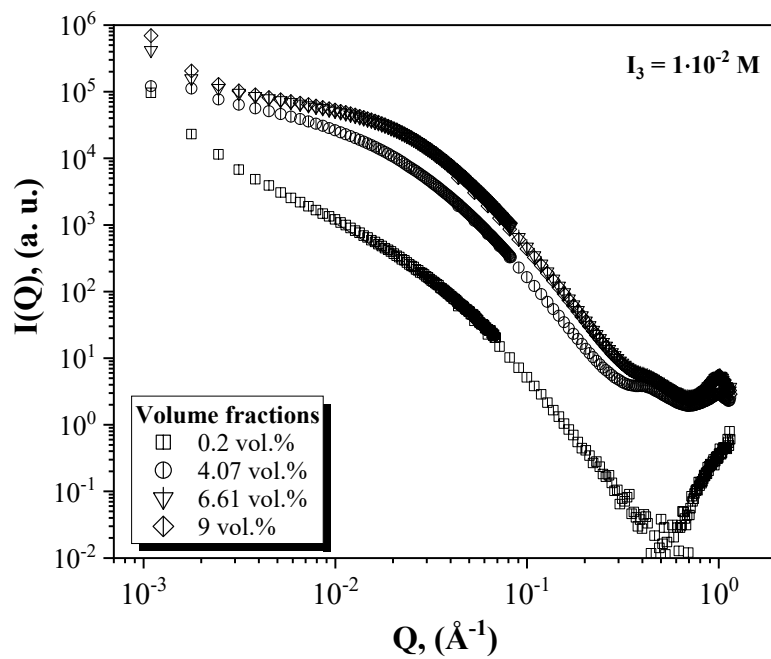
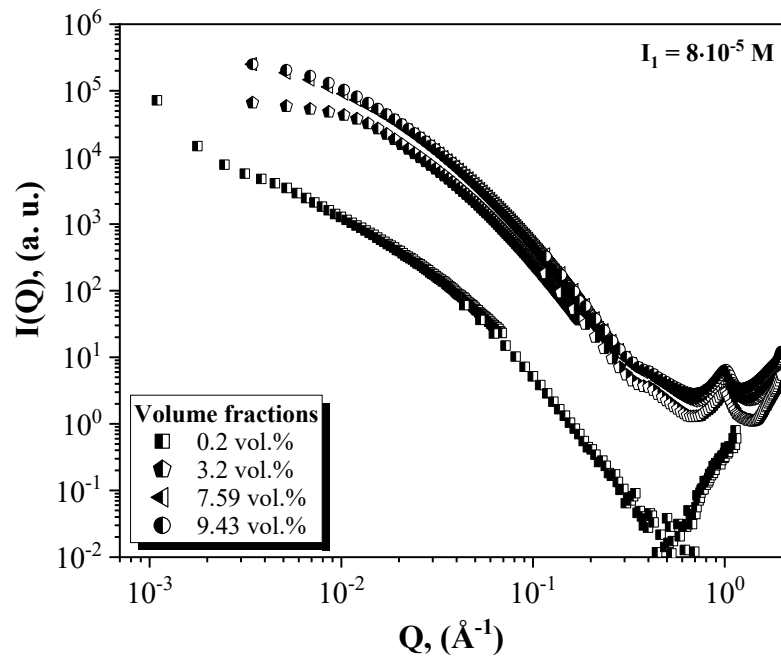
* Corresponding authors. E-mail : eric.lecolier@ifpen.fr . Tel : (33) 1 47 52 57 17.

Appendix A. Supplementary data



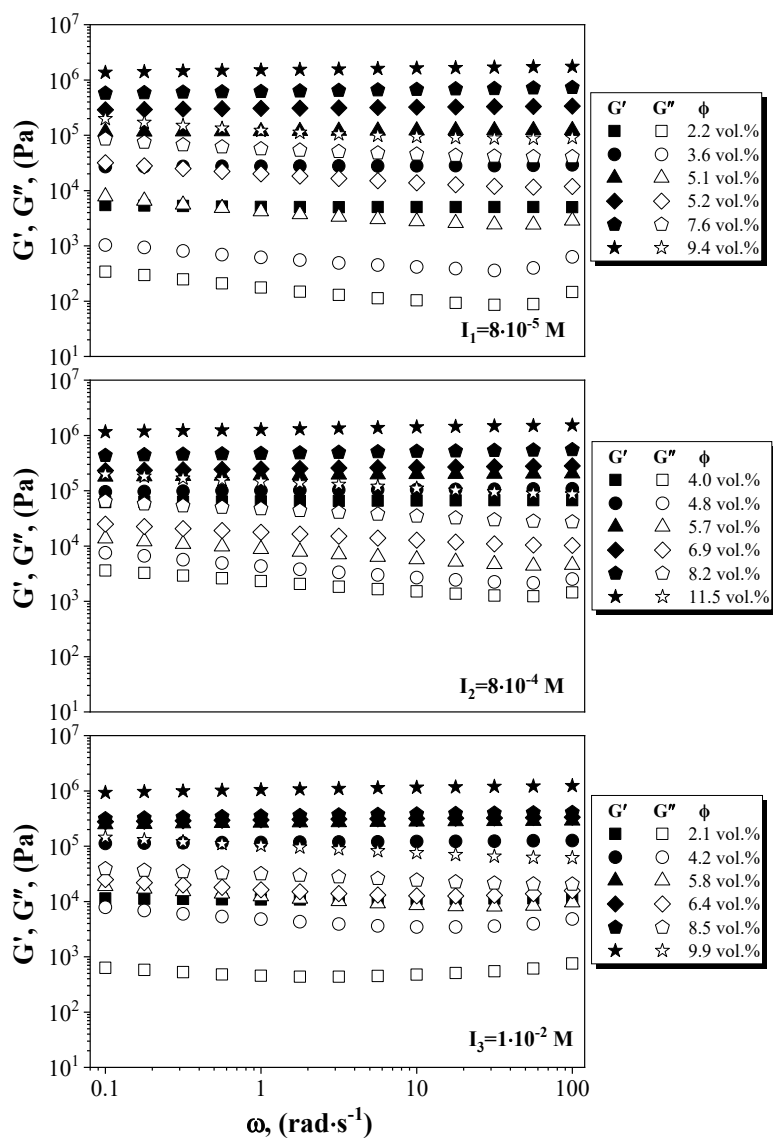
SP.1. TEM image of peptised boehmite dispersion. Initial conditions $143 \text{ g}\cdot\text{L}^{-1}$ in an aqueous solution containing $0.186 \text{ mol}\cdot\text{L}^{-1}$ of nitric acid. Dilution factor $\times 20\,000$ on a carbon grid.

Appendix B. Supplementary data

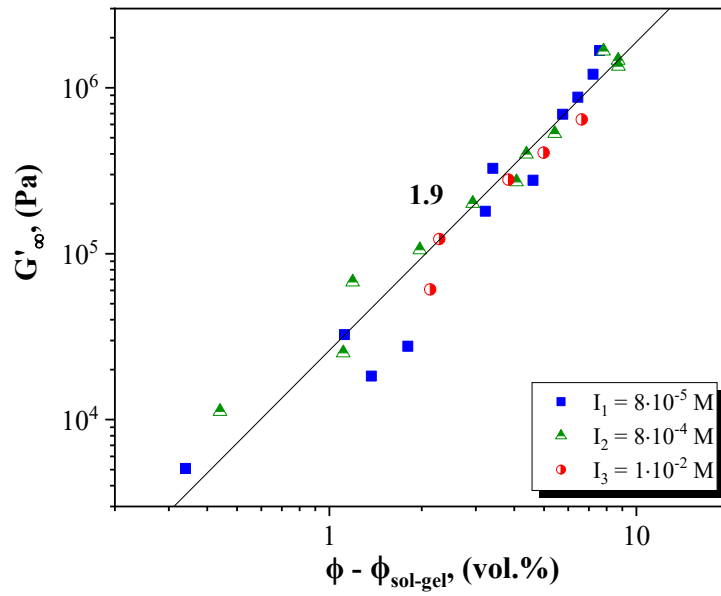


SP.2. Small-angle X-ray spectra for boehmite dispersions at different volume fractions at ionic strengths $I_1 = 8 \cdot 10^{-5} \text{ M}$ and $I_3 = 1 \cdot 10^{-2} \text{ M}$.

Appendix C. Supplementary data

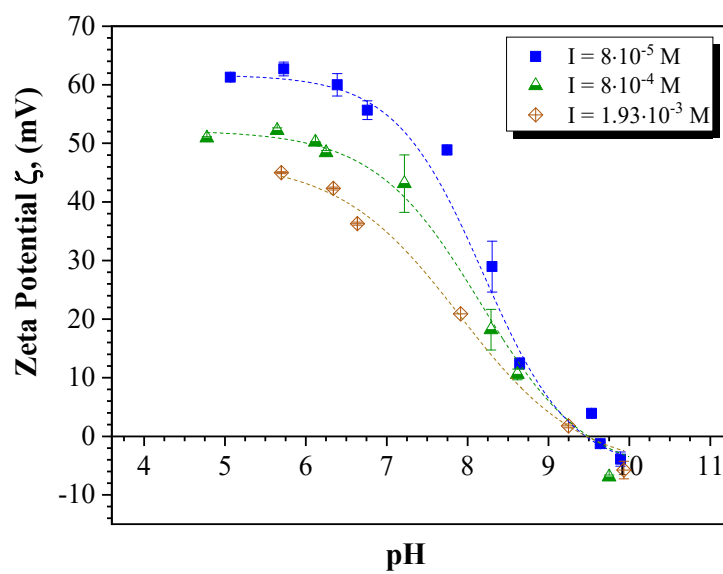


SP.3. Moduli G' (closed symbols) and G'' (open symbols) from frequency sweep measurements for boehmite dispersions at ionic strengths (from top to bottom) of $8 \cdot 10^{-5}$ M, $8 \cdot 10^{-4}$ M and $1 \cdot 10^{-2}$ M. For clarity, not all experimental curves are presented



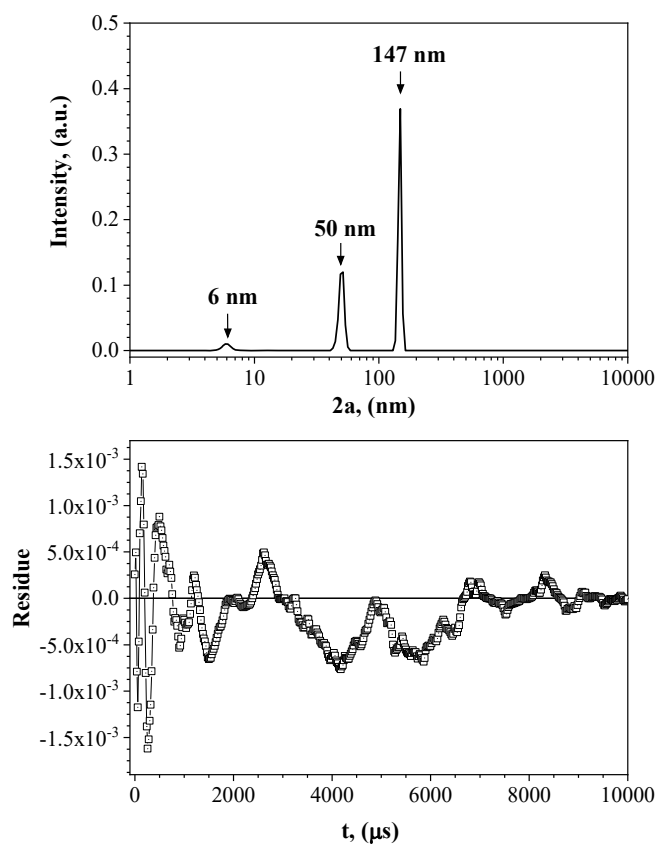
SP.4. High frequency elastic modulus G'_∞ as a function of reduced volume fraction ($\phi - \phi_{\text{sol-gel}}$) for boehmite dispersions at ionic strength of $8 \cdot 10^{-5} \text{ M}$, $8 \cdot 10^{-4} \text{ M}$ and $1 \cdot 10^{-2} \text{ M}$.

Appendix D. Supplementary data



SP.5. Evolution with pH of the zeta potential ζ of boehmite dispersions at ionic strengths of $8 \cdot 10^{-5} \text{ M}$, $8 \cdot 10^{-4} \text{ M}$ and $1.93 \cdot 10^{-3} \text{ M}$.

Appendix E. Supplementary data



SP.6. (Top) Example of hydrodynamic radius a obtained from SBL fit of DLS autocorrelation function for boehmite suspension at ionic strength of $8 \cdot 10^{-4}$ M. (Bottom) Residue from SBL fit.