ELECTRONIC SUPPLEMENTARY INFORMATION

Structural effects of soft nanoparticulate ligands on trace metal complexation thermodynamics

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Outline of the ESI content:

Section A. Additional details on AGNES technique

Section B. Supporting Figure S1 displaying supplementary SSCP results for Cd binding to p(N-AA) particles at an ionic strength of 100 mM and Cd(II) binding to p(MA-N) particles at 15 mM and 100 mM solution ionic strength.

Section A. Additional details on AGNES technique

To complete the theoretical section given in the paper, we recall here the methodology for the determination of the stability constant from the AGNES technique. The ratio between the amount of metal accumulated within the mercury electrode and the free metal concentration in solution is simply given by:

\[
Y = \frac{\frac{c^*_M}{c^*_M}}{c^*_M} = \exp\left[-\frac{nF(E_1 - E^0)}{RT}\right]
\]

(S-1)
where $Y$ is the so-called concentration gain, $c^0_M$ the metal concentration inside the mercury electrode, $E_1$ is the deposition potential, $E'_f$ the standard potential of the redox couple $M/M^+$. The concentration gain is evaluated by means of calibration plots established prior to experiments.

When performing AGNES there is a balance between higher gains (more negative deposition potentials) and the longer deposition times necessary to attain equilibrium in the amalgam, hence the best available electrode to perform these experiments is the thin mercury film electrode (TMFE) due its large area and small volume. Using the mass balance for the metal species and the experimentally determined free metal concentration, the thermodynamic complex stability constant in the bulk can be easily computed.

Section B. Supporting Figure S1 displaying supplementary SSCP results for Cd binding to p(N-AA) particles at an ionic strength of 100 mM and Cd(II) binding to p(MA-N) particles at 15 mM and 100 mM solution ionic strength.

In this section, the SSCP results are given for the Cd binding to p(N-AA) at 100 mM ionic strength (panel A) and at 15 and 100 mM ionic strengths for p(MA-N) (panel B and C).
Figure S1: SSCP experimental points and simulated curves in the presence of Cd (total concentration of 5x10^-7 M) and p(N-AA) particles at 0.1% (w/w) at 100 mM ionic strength (panel A), p(MA-N) particles at 0.1% (w/w) at 15 mM and 100mM ionic strengths, (panel B and C, respectively). Experiments were conducted at pH 7.5. Solid lines represent the simulated curves for homogeneous systems (see manuscript for more details). The three figures for each panel represent the data obtained for three following temperatures 15, 25 and 35°C, respectively.
Reference applying to this document.