Electronic Supplementary Information (ESI) for *Environmental Science: Nano*

Reply to the 'Comment on "Colloidal stability of reduced graphene oxide materials prepared using different reducing agents"' by M. Moazzami Gudarzi, *Environ. Sci.: Nano*, 2017, 4, DOI: 10.1039/C6EN00424E

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Calculation of surface potentials as a function of ionic strength

We used Eqn. 9 and 10 of Gudarzi[1] (i.e., Ref. 9 of the comment[2]) to reproduce the two lines in Fig. 1a of the comment,[2] i.e., surface potential (Ψ) as a function of ionic strength (I) at two different surface charge density (σ) values. Eqn. 9 and 10 of Gudarzi[1] are expressed as:

$$\kappa^{-1} = \sqrt{\frac{\varepsilon\varepsilon_0 k_B T}{2N_A e^2 I}}$$

$$\sigma = \frac{2\varepsilon\varepsilon_0 \kappa k_B T}{e} \sinh\left(\frac{e\Psi}{k_B T}\right)$$

where κ is the inverse of the Debye length, ε is the dielectric constant of solvent, ε_0 is the permittivity of vacuum, k_B is the Boltzmann constant, T is the absolute temperature, N_A is the Avogadro number, and e is the elementary charge. The values of the constants that were used to reproduce the two lines are listed in Table S1. To plot the two lines, we first assumed a σ value of -10 mC/m^2 to solve for Ψ as a function of I. Then, we repeated the calculation using a σ value of -18 mC/m^2.

Table S1. Summary of values used for the constants of Eqn. 9 and 10 of Gudarzi[1].

Constant	Value
ε	78.4
ε_0 (C^2/J m)	8.85×10^{-12}
k_B (J/K)	1.38×10^{-23}
T (K)	298
N_A (mol^{-1})	6.02×10^{23}
e (C)	1.6×10^{-19}

References

1 M. M. Gudarzi, *Langmuir*, 2016, **32**, 5058-5068.

2 M. Moazzami Gudarzi, *Environ. Sci.: Nano*, 2017, **4**, DOI: 10.1039/C6EN00424E.