

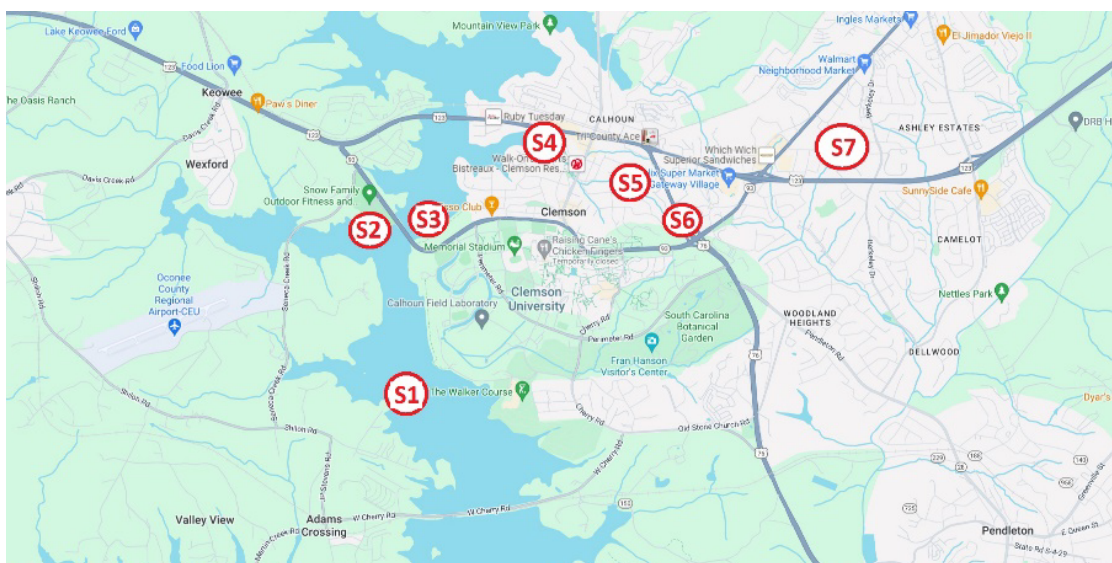
*Supplementary information for*

**Detection of Surfactants using a Hydrophobic Natural Deep  
Eutectic Solvent and Smartphone**

Vagner Bezerra dos Santos, Lucas B. Ayres, Helayne Santos de Sousa, Carlos D. Garcia, and Willian  
Toito Suarez

**Table of Contents**

Figure SI 1: Location of the sample collection points that correspond to the shore of Lake Hartwell or a city creek that feeds to the lake. ....	2
Table SI 1: Analysis of cations and anions as potential interferent for SDS analysis using a 1:100 ratio .....	2
Table SI 2: Recovery data for water samples employing HNADES and DIB to detect SDS .....	3
Table SI 3: Surfactant concentration measured using DIB and UV-Vis spectrophotometry (reference).....	4



**Figure S1 1:** Location of the sample collection points that correspond to the shore of Lake Hartwell or a city creek that feeds to the lake. GPS coordinates: S1 (34.664131, -82.858203), S2 (34.681428, -82.865725), S3 (34.684385, -82.849207), S4 (34.690127, -82.837736), S5 (34.686904, -82.831580), S6 (34.686888, -82.831482) and S7 (34.682978, -82.811399).

**Table S1 1:** Analysis of cations and anions as potential interferent for SDS analysis using a 1:100 ratio (SDS: potential interferent). The value is the average for n = 3

Cations and anions	RE (%)
Ca <sup>2+</sup>	6.10
Na <sup>+</sup>	6.83
Cu <sup>2+</sup>	-6.98
Ni <sup>2+</sup>	7.03
Mg <sup>2+</sup>	0.48
Fe <sup>3+</sup>	71.10
Fe <sup>2+</sup>	13.78
Al <sup>3+</sup>	-1.31

Bi <sup>3+</sup>	5.23
Cl <sup>-</sup>	-1.81
Br <sup>-</sup>	5.11
PO <sub>4</sub> <sup>-3</sup>	-9.46

---

**Table SI 2:** Recovery data for water samples employing HNADES and DIB to detect SDS. Data obtained in triplicate (n = 3).

Sample	Added (mg.L <sup>-1</sup> )	Found (mg.L <sup>-1</sup> )	Recovery (%)
S1	0.160	0.158 ± 0.009	98.5
	0.350	0.345 ± 0.007	98.5
S2	0.160	0.173 ± 0.009	108
	0.350	0.337 ± 0.005	96.2
S3	0.160	0.161 ± 0.009	101
	0.350	0.349 ± 0.009	99.6
S4	0.160	0.190 ± 0.009	119
	0.350	0.363 ± 0.009	104
S5	0.160	0.139 ± 0.009	86.6
	0.350	0.374 ± 0.008	107
S6	0.160	0.150 ± 0.009	93.8
	0.350	0.355 ± 0.009	101

S7	0.160	0.134 ± 0.007	83.6
	0.350	0.339 ± 0.009	96.8

**Table SI 3:** Surfactant concentration measured using DIB and UV-Vis spectrophotometry (reference). Data with  $n = 3$ , F-tabled = 19.00 for  $n-1 = 2$ . T-tabled = 4.303 for  $n-1 = 2$ . Data for 95% confidence.

Sample	Proposed Methodology (mg.L <sup>-1</sup> )	Spectrophotometry (mg.L <sup>-1</sup> )	Difference (%)	F-test	T-test
S1	0.101 ± 0.005	0.094 ± 0.001	7.09	15.6	2.34
S2	0.129 ± 0.003	0.140 ± 0.001	-7.86	18.5	3.74
S3	0.140 ± 0.004	0.150 ± 0.001	-6.94	5.00	4.20
S4	0.111 ± 0.002	0.122 ± 0.005	-9.06	4.90	0.92
S5	0.111 ± 0.016	0.110 ± 0.042	0.69	6.43	0.55
S6	0.112 ± 0.002	0.120 ± 0.042	-6.58	3.37	0.52
S7	0.107 ± 0.005	0.110 ± 0.001	-2.42	1.13	3.18