Supporting information

Nanostructured Fluids from Degradable Nonionic Surfactants for the Cleaning of Works of Art from Polymer Contaminants

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No kinship exists among these authors.

Table S1. Viscosity (Pa·s) of D_2O/MEK was measured as a function of temperature using a Ubbelhode viscosimeter immersed in a thermostatic bath. D_2O has a viscosity of 1.11 Pa·s, while MEK has a viscosity of 0.80 Pa·s at 20 °C. The table reports the unusual behavior of the mixture: while the viscosity for a given MEK concentration decreases when temperature is raised, increasing MEK concentration results in a higher viscosity, which is unexpected in view of the viscosities of the two solvents alone.

MEK concentration	25°C	35°C	45°C
4	0.9393	0.744	0.6049
8	1.0413	0.8006	0.6469
13.5	1.3737	1.0404	0.7659
20	1.3134	0.9941	0.7783

Table S2. Molecular properties of the chemicals used in SANS experiments. The alkyl portion of the two surfactants was considered as composed of 10 C atoms on average, while no distinction was taken into account between the 5.5 EO groups of NR and the 6 EO groups of BR.

Compound	Formula	Molecular mass (g/mol)	SLD (10^{-6} Å^{-2})
Heavy water	D_2O	20.04	6.39
BR	$C_{10}H_{21}(CH_2CH_2O)_6OH$	422.6	0.37
BR tail	$C_{10}H_{21}$	141.2	-0.41
BR head	$(CH_2CH_2O)_6OH$	281.4	0.97
MEK	$(C_2H_5)CO(CH_3)$	72.11	0.17

Table S3. SANS fitting parameters for the BR-based systems.

Fitting parameter	BR – MEK 0%	BR – MEK 4%	BR – MEK 8%	BR – MEK 13.5%	BR – MEK 20%
ϕ	0.051	0.048	0.045	0.043	0.049
r (Å)	16.6	15.6	15.5	14.4	14.1
poly	0.39	0.38	0.36	0.38	0.40
t (Å)	7.7	8.0	6.1	4.7	4.5
SLD_{core} (Å^{-2})	$-4.1\cdot10^{-7}$	$-4.1\cdot10^{-7}$	$-4.1\cdot10^{-7}$	$-4.1\cdot10^{-7}$	$-2.8\cdot10^{-7}$
SLD_{shell} (Å^{-2})	$3.1\cdot10^{-6}$	$3.5\cdot10^{-6}$	$2.2\cdot10^{-6}$	$1.0\cdot10^{-6}$	$9.1\cdot10^{-7}$
SLD_{bulk} (Å^{-2})	$6.4\cdot10^{-6}$	$6.0\cdot10^{-6}$	$5.7\cdot10^{-6}$	$5.3\cdot10^{-6}$	$4.9\cdot10^{-6}$
K_1	6.7	5.5	6.5	6.5	10.5
Z_1	31.0	34.7	34.8	34.8	25.4
K_2	-1.3	-0.9	-1.7	-1.7	-0.5
Z_2	11.7	4.0	3.9	3.9	2.3
N_w	8.5	12.1	3.9	0.1	0.3
N_{agg}	62	51	50	40	30

Table S4. SANS fitting parameters for the NR-based systems.

Fitting parameter	NR – MEK 0%	NR – MEK 4%	NR – MEK 8%	NR – MEK 13.5%	NR – MEK 20%
ϕ	0.051	0.048	0.045	0.042	0.038
a (Å)	489.9	-	-	-	317.4
b (Å)	14.4	-	-	-	17.3
r (Å)	-	15.9	16.8	16.2	-
poly	-	0.47	0.44	0.46	-
t (Å)	14.5	8.3	7.6	6.2	15.9
SLD_{core} (Å^{-2})	$-4.1\cdot10^{-7}$	$-4.1\cdot10^{-7}$	$-4.1\cdot10^{-7}$	$-4.1\cdot10^{-7}$	$-2.1\cdot10^{-7}$
SLD_{shell} (Å^{-2})	$4.1\cdot10^{-6}$	$3.6\cdot10^{-6}$	$2.9\cdot10^{-6}$	$2.1\cdot10^{-6}$	$4.0\cdot10^{-6}$
SLD_{bulk} (Å^{-2})	$6.4\cdot10^{-6}$	$6.0\cdot10^{-6}$	$5.7\cdot10^{-6}$	$5.3\cdot10^{-6}$	$4.9\cdot10^{-6}$
K_1	4.2	21.1	20.2	20.2	10.0
Z_1	36	25.1	25.1	25.1	35.6
K_2	-1.3	-2.2	-4.1	-4.0	-3.3
Z_2	9.0	20.0	20.0	20.0	9.0
N_w	18.9	12.8	7.7	3.6	25.5
N_{agg}	1367	54	64	57	857