Supporting Information File

Unveiling the Role of Structure-Polarity Interplay in Non-Ionic Micellar Catalyzed Oxidative Transformation of Isoleucine: Towards Sustainable Oxidation in Aqueous Media

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Content

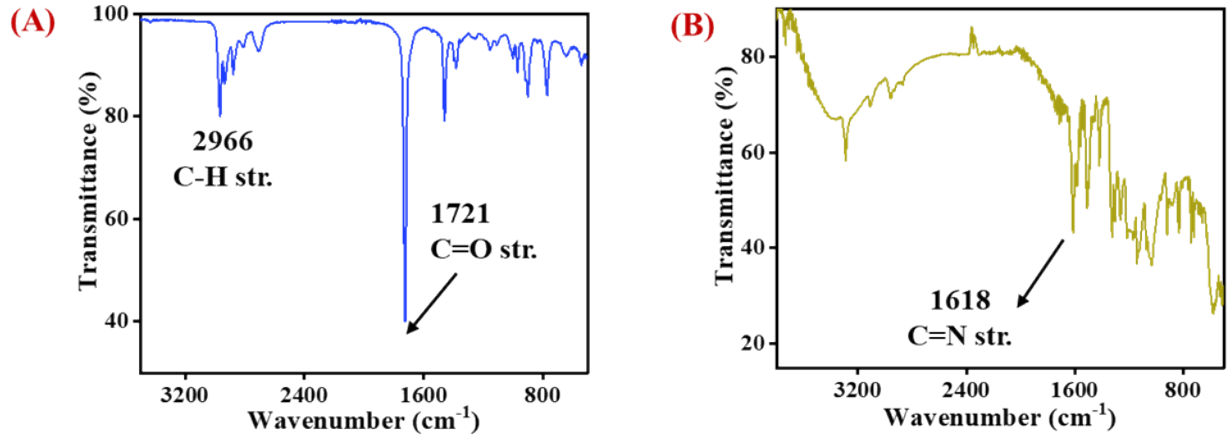

Figure S1. FT-IR spectrum: (A) oxidized product (2-methylbutanal) and (B) hydrazone derivative of corresponding aldehyde product

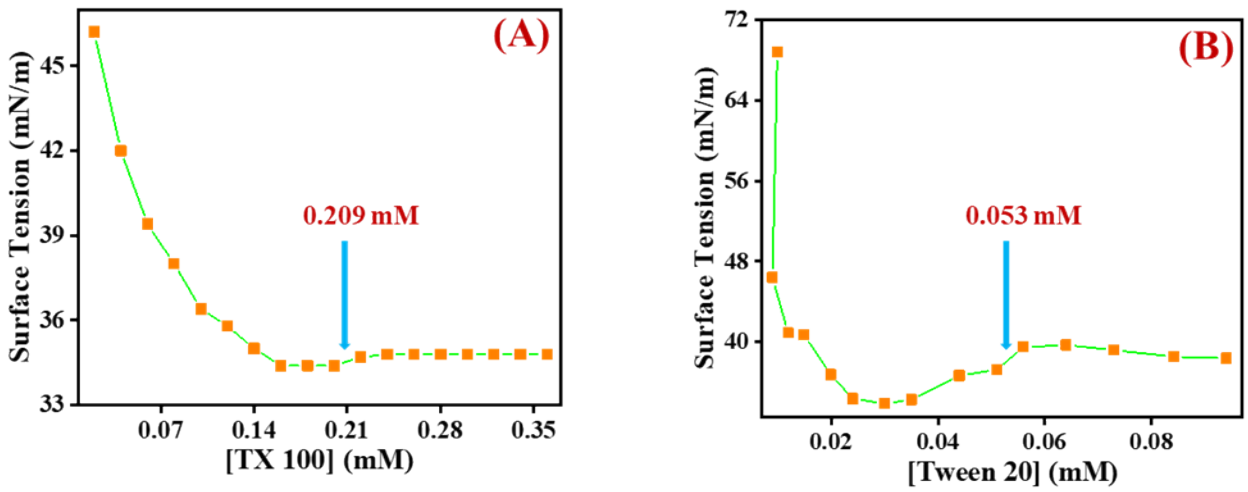

Figure S2: CMC determination of surfactants by surface-tension method; (A) TX 100 and (B) Tween 20 micellar medium

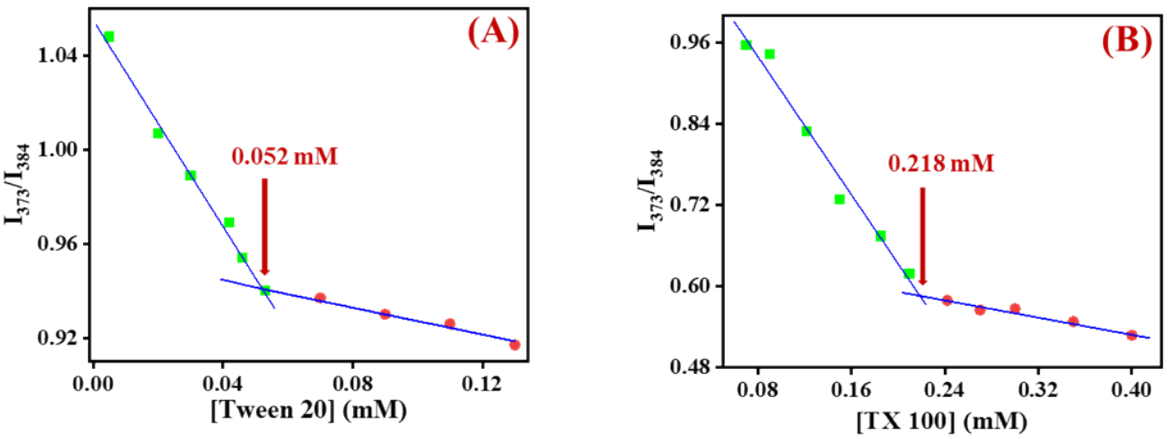

Figure S3.

Determination of CMC using fluorometric method for (A) Tween 20 (B) TX-100 micellar microenvironment.

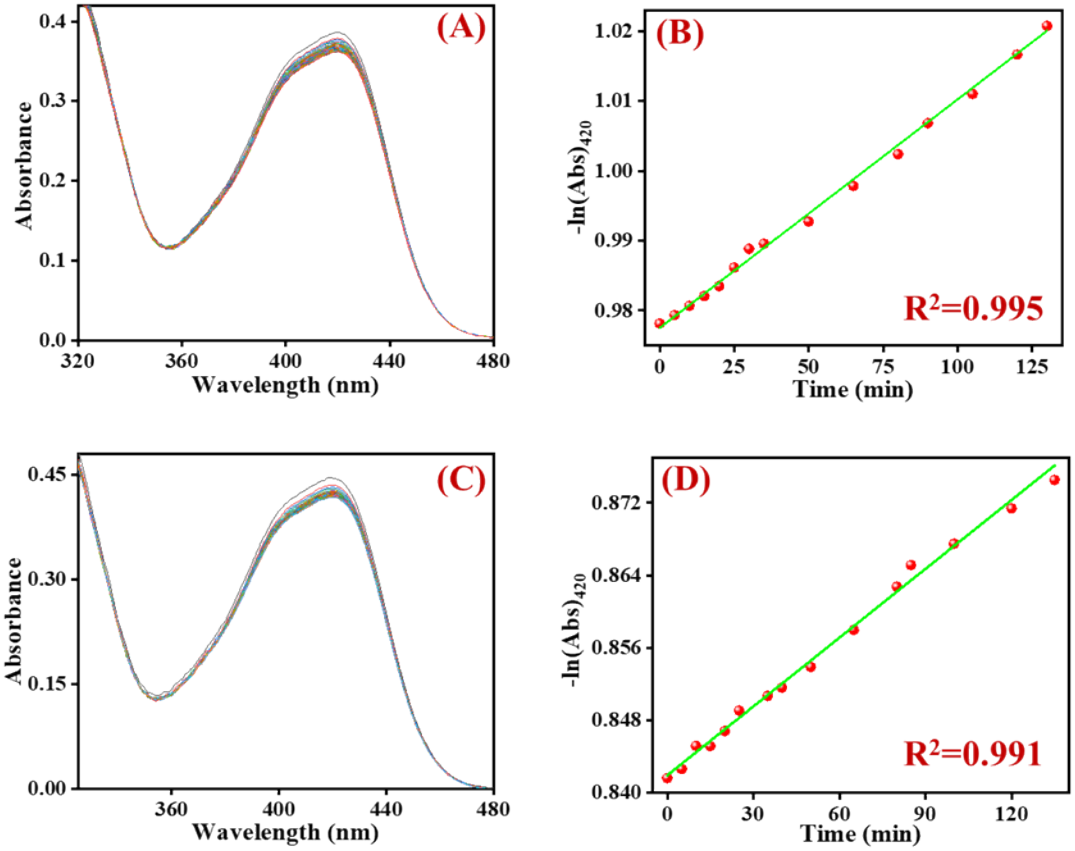

Figure S4. Sequential scanned spectra and plot of -ln(Abs)420 vs time (minutes) of oxidation of isoleucine in presence of (A) in 0.02 mM Tween 20 at 5 min int and (B) in 0.4 mM TX 100 at 5 min int. [Reaction condition: [isoleucine] = 6×10^{-3} (M), [NaOH] = 0.8 (M), $[Fe(CN)_6]^{3-}$ = 4×10^{-4} (M), T = 30 °C.]

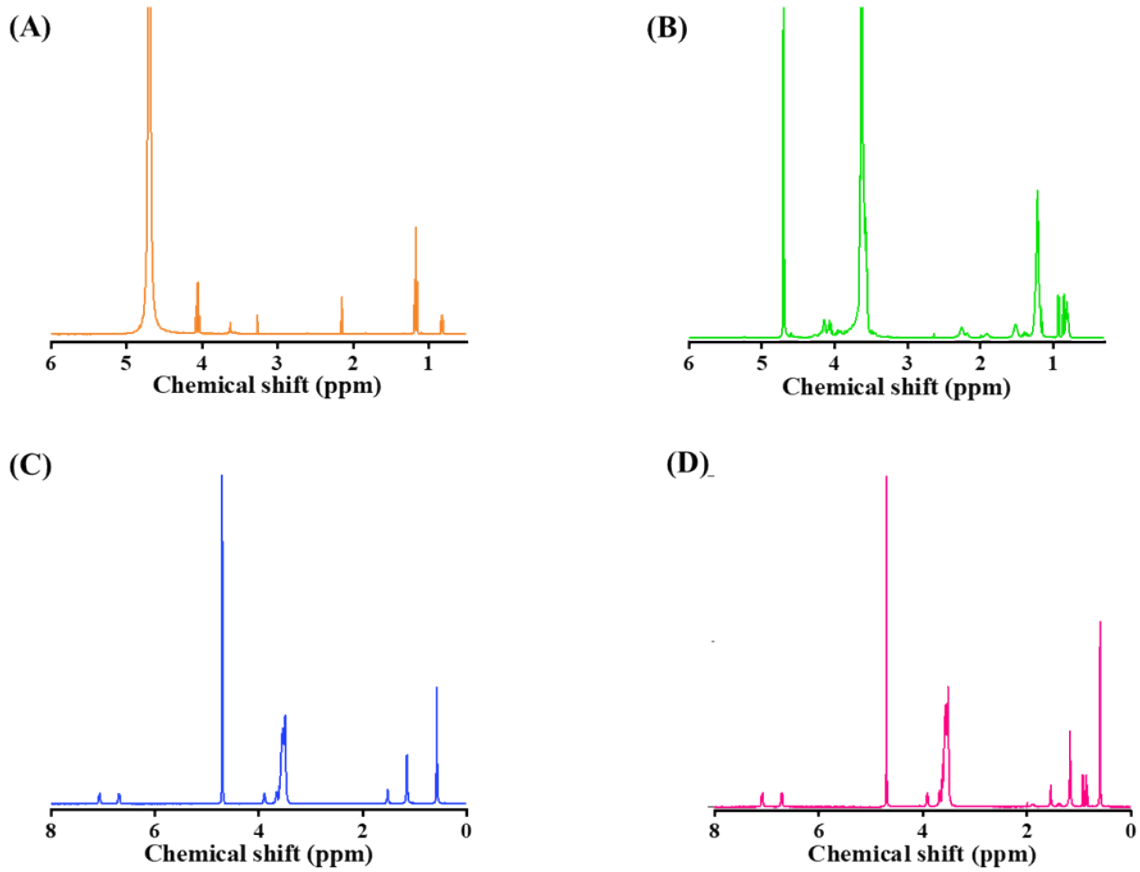

Figure S5. ^{1}H-NMR spectrum (in D_2O solvent) of (A) Tween 20 , (B) Tween 20 + isoleucine, (C) TX 100, and (D) TX 100 + isoleucine

Systems	Hydrodynamic diameter(nm)	PDI
0.2 mM TW-20	44.5	0.790
0.2 mM TW-20 +isoleucine	69.5	0.383
0.8 mM TX-100	32.2	0.210
0.8 mM TX-100 +isoleucine	43.3	0.353

Table S1: The hydrodynamic diameter (nm) and polydispersity index (PDI) of surfactant systems in presence and absence of substrate as obtained from the dynamic light scattering (DLS) measurement

Table S2: The Fitting parameters for 0.2 mM Tween 20 micellar medium

Composition	τ_1	a_1 **(%)**	τ_2	a_2 **(%)**	**⟨τ⟩ (ns)**	χ^2
0.2 mM Tween 20	0.5797895	71.28	6.789833	28.72	5.7038	1.028236

Equation used for life time calculation:

$$<\tau>= (a1(\tau_1)\text{^}2 + a2(\tau_2)\text{^}2)/(a1\tau_1 + a2\tau_2)$$

Table S3: The Fitting parameters for 0.8 mM TX 100 micellar medium

Composition	τ_1	a_1 **(%)**	τ_2	a_2 **(%)**	τ_3	a_3 **(%)**	**⟨τ⟩ (ns)**	χ^2
0.8 mM TX 100	4.012909	6.69	189.4214	62.52	0.1069821	30.79	189	1.088399

Equation used for life time calculation:

$$< \tau >= (a1(\tau_1)\text{^}2 + a2(\tau_2)\text{^}2 + a3(\tau_3)\text{^}2)/(a1\tau_1 + a2\tau_2 + a3\tau_3)$$