

Kinetic Study of Ru(III) Promoted Oxidation of L-Tryptophan in an Anionic Surfactant Medium by Hexacyanoferrate(III)

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Supplementary Information

Table S1. Dependency of observed rate constant on $[\text{OH}^-]$.

$[\text{OH}^-] \times 10^{-3}$	$V_i \times 10^5, \text{M min}^{-1}$ (Without SDS)	$V_i \times 10^5, \text{M min}^{-1}$ (with SDS)
4.0	0.76	8.7
6.0	0.96	10.7
9.0	1.13	12.5
13.0	1.28	14.1
15.0	1.32	14.6
18.0	1.39	15.2
23.0	1.45	15.8
28.0	1.49	16.2

Reaction condition: $[\text{Trp}] = 1.75 \times 10^{-3} \text{ mole dm}^{-3}$, $I = 0.1 \text{ mole dm}^{-3}$ (KNO_3), $[\text{SDS}] = 4.0 \times 10^{-3} \text{ mole dm}^{-3}$,
 Temperature = $45.0 \pm 0.1 \text{ }^\circ\text{C}$, $[\text{Ru}^{3+}] = 1.0 \times 10^{-6} \text{ mole dm}^{-3}$, and $[\text{Fe}(\text{CN})_6^{3-}] = 1.5 \times 10^{-4} \text{ mole dm}^{-3}$.

Table S2. Dependency of observed rate constant on $[\text{SDS}]$.

$[\text{SDS}] \times 10^3 \text{ M}$	$V_i \times 10^5, \text{M min}^{-1}$
0	1.32
0.25	1.52
0.5	1.9
0.75	2.5
1	3.5
1.4	6
1.75	8.1
2	9.2
2.5	12
3	13.5
4	15.6
5	14.4
6	13.5
7	12.7

Reaction condition: $[\text{Trp}] = 1.75 \times 10^{-3} \text{ mole dm}^{-3}$, $I = 0.1 \text{ mole dm}^{-3}$ (KNO_3), $[\text{OH}^-] = 1.5 \times 10^{-2} \text{ mole dm}^{-3}$,
 Temperature = $45.0 \pm 0.1 \text{ }^\circ\text{C}$, $[\text{Ru}^{3+}] = 1.0 \times 10^{-6} \text{ mole dm}^{-3}$, and $[\text{Fe}(\text{CN})_6^{3-}] = 1.5 \times 10^{-4} \text{ mole dm}^{-3}$.

Table S3. Dependency of observed rate constant on [Trp].

[Trp] x 10 ⁻³	V _i x 10 ⁵ , M min ⁻¹ (Without SDS)	V _i x 10 ⁵ , M min ⁻¹ (with SDS)
1.0	0.49	5.3
1.05	0.67	7.5
1.1	0.81	9.0
1.2	0.99	10.8
1.4	1.195	13.15
1.6	1.285	14.1
1.75	1.345	14.75
1.8	1.37	15.0
2.0	1.4	15.3
2.25	1.42	15.5

Reaction condition: [SDS] = 4.0×10^{-3} mole dm⁻³, I = 0.1 mole dm⁻³ (KNO₃), [OH⁻] = 1.5×10^{-2} mole dm⁻³, Temperature = 45.0 ± 0.1 °C, [Ru³⁺] = 1.0×10^{-6} mole dm⁻³, and [Fe(CN)₆³⁻] = 1.5×10^{-4} mole dm⁻³.

Table S4. Dependency of observed rate constant on [Fe(CN)₆⁴⁻].

[Fe(CN) ₆ ⁴⁻] x 10 ⁻⁴	V _i x 10 ⁵ , M min ⁻¹ (Without SDS)	V _i x 10 ⁵ , M min ⁻¹ (with SDS)
0.8	1.29	14.2
1	1.3	14.3
1.5	1.32	14.6
2	1.34	14.9
3	1.38	15.4
4.5	1.44	16.1
6	1.49	16.8
7.5	1.54	17.4

Reaction condition: [Trp] = 1.75×10^{-3} mole dm⁻³, I = 0.1 mole dm⁻³ (KNO₃), [SDS] = 4.0×10^{-3} mole dm⁻³, Temperature = 45.0 ± 0.1 °C, [Ru³⁺] = 1.0×10^{-6} mole dm⁻³, and [OH⁻] = 1.5×10^{-2} mole dm⁻³.

Table S5. Dependency of observed rate constant on [Electrolyte].

[Electrolyte]	$V_i \times 10^5, \text{M min}^{-1}$ (Without SDS)	$V_i \times 10^5, \text{M min}^{-1}$ (with SDS)
0.075	1.3	14.3
0.1	1.32	14.6
0.15	1.37	15.2
0.20	1.42	15.7
0.30	1.52	16.8
0.40	1.6	17.7
0.50	1.7	18.8

Reaction condition: $[\text{Trp}] = 1.75 \times 10^{-3} \text{ mole dm}^{-3}$, $[\text{OH}^-] = 1.5 \times 10^{-2} \text{ mole dm}^{-3}$, Temperature = $45.0 \pm 0.1 \text{ }^\circ\text{C}$, $[\text{Ru}^{3+}] = 1.0 \times 10^{-6} \text{ mole dm}^{-3}$, $[\text{Fe}(\text{CN})_6^{3-}] = 1.5 \times 10^{-4} \text{ mole dm}^{-3}$, and $[\text{SDS}] = 4.0 \times 10^{-3} \text{ mole dm}^{-3}$.

Table S6. Dependency of observed rate constant on $[\text{Ru}^{3+}]$.

$[\text{Ru}] \times 10^{-6}$	$V_i \times 10^5, \text{M min}^{-1}$ (Without SDS)	$V_i \times 10^5, \text{M min}^{-1}$ (with SDS)
0.5	1.05	11.5
0.75	1.18	13
1	1.32	14.6
1.75	1.68	19.0
2.5	2.05	23.2
3.75	2.65	29.5
5.0	3.2	35.8

Reaction condition: $[\text{Trp}] = 1.75 \times 10^{-3} \text{ mole dm}^{-3}$, $I = 0.1 \text{ mole dm}^{-3} (\text{KNO}_3)$, $[\text{OH}^-] = 1.5 \times 10^{-2} \text{ mole dm}^{-3}$, Temperature = $45.0 \pm 0.1 \text{ }^\circ\text{C}$, $[\text{SDS}] = 4.0 \times 10^{-3} \text{ mole dm}^{-3}$, and $[\text{Fe}(\text{CN})_6^{3-}] = 1.5 \times 10^{-4} \text{ mole dm}^{-3}$.