

Lab Summary Chemical Equilibrium

Initial Data

Solution	mL 2×10^{-3} M Fe^{3+}	mL 2×10^{-3} M SCN^{-}	0.5 M HNO_3	Absorbance @ 445 nm
1	5.0	1.0	4.0	0.066
2	5.0	2.0	3.0	0.170
3	5.0	3.0	2.0	0.251
4	5.0	4.0	1.0	0.342
5	5.0	5.0	0.0	0.423

Analysis

Initial volumes and molarities of ions were multiplied to find initial moles

Solution initial moles Fe^{3+} initial moles SCN^{-}

1	1×10^{-5}	2×10^{-6}
2	1×10^{-5}	4×10^{-6}
3	1×10^{-5}	6×10^{-6}
4	1×10^{-5}	8×10^{-6}
5	1×10^{-5}	1×10^{-5}

The concentrations of FeSCN^{2+} were found by dividing each absorbance number by the constant found last class (3820)

$$0.066 / 3820 = 1.7 \times 10^{-5} \text{ M}$$

$$0.170 / 3820 = 4.5 \times 10^{-5} \text{ M}$$

$$0.251 / 3820 = 6.6 \times 10^{-5} \text{ M}$$

$$0.342 / 3820 = 9.0 \times 10^{-5} \text{ M}$$

$$0.423 / 3820 = 1.1 \times 10^{-4} \text{ M}$$

These concentrations were then multiplied by volume to find moles of FeSCN^{2+} at equilibrium

$$1.7 \times 10^{-5} \text{ M} \times 0.1 \text{ L} = 1.7 \times 10^{-6}$$

$$4.5 \times 10^{-5} \text{ M} \times 0.1 \text{ L} = 4.5 \times 10^{-6}$$

$$6.6 \times 10^{-5} \text{ M} \times 0.1 \text{ L} = 6.6 \times 10^{-6}$$

$$9.0 \times 10^{-5} \text{ M} \times 0.1 \text{ L} = 9.0 \times 10^{-6}$$

$$1.1 \times 10^{-4} \text{ M} \times 0.1 \text{ L} = 1.1 \times 10^{-5}$$

I am unfortunately unable to find the equilibrium concentrations for the reactants.