Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Lab Day & Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_

## Data Sheet

### Parts I & II, FeNCS2+ Concentrations of Standard Solution for Beer’s Law Plot

Concentration of Fe(NO3)3 in 0.10 *M* HNO3 in carboy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *M*

Concentration of NaSCN in 0.10 *M* HNO3 stock solution \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *M*

|  |  |
| --- | --- |
|  | Flask ID |
|  | S1 |  | S2 |  | S3 |  | S4 |  | S5 |
| Volume of NaSCN in 0.10 *M* HNO3 added |  mL |  |  mL |  |  mL |  |  mL |  |  mL |
| Initial SCN– concentration |  *M* |  |  *M* |  |  *M* |  |  *M* |  |  *M* |
| Equilibrium FeNCS2+ concentration |  *M* |  |  *M* |  |  *M* |  |  *M* |  |  *M* |

Calibration curve: slope (*m*) \_\_\_\_\_\_\_\_\_\_ y-intercept (*b*) \_\_\_\_\_\_\_\_\_\_ correlation (*R*2) \_\_\_\_\_\_\_\_\_\_

### Part III, Preparing and Measuring Equilibrium Mixtures

Concentration of Fe(NO3)3 in 0.10 *M* HNO3 in bottle on bench top \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *M*

Concentration of NaSCN in 0.10 *M* HNO3 stock solution \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *M*

|  |  |
| --- | --- |
|  | Test Tube ID |
|  | E1 |  | E2 |  | E3 |  | E4 |  | E5 |
| Volume of Fe(NO3)3 in 0.10 *M* HNO3 added |  mL |  |  mL |  |  mL |  |  mL |  |  mL |
| Volume of NaSCN in 0.10 *M* HNO3 added |  mL |  |  mL |  |  mL |  |  mL |  |  mL |
| Equilibrium constant expression: | *K*c = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

#### ICE Tables

Test Tube E1

|  |  |
| --- | --- |
|  |  Fe3+(aq) + SCN−(aq) ⇌ FeNCS2+(aq) |
| Initial conc./ *M*: |  |  | 0 |
| Change in conc. at equilibrium/ *M*: |  |  |  |
| Equilibrium conc./ *M*: |  |  |  |
| Value of *K*c (no units) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Test Tube E2

|  |  |
| --- | --- |
|  |  Fe3+(aq) + SCN−(aq) ⇌ FeNCS2+(aq) |
| Initial conc./ *M*: |  |  | 0 |
| Change in conc. at equilibrium/ *M*: |  |  |  |
| Equilibrium conc./ *M*: |  |  |  |
| Value of *K*c (no units) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Test Tube E3

|  |  |
| --- | --- |
|  |  Fe3+(aq) + SCN−(aq) ⇌ FeNCS2+(aq) |
| Initial conc./ *M*: |  |  | 0 |
| Change in conc. at equilibrium/ *M*: |  |  |  |
| Equilibrium conc./ *M*: |  |  |  |
| Value of *K*c (no units) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Test Tube E4

|  |  |
| --- | --- |
|  |  Fe3+(aq) + SCN−(aq) ⇌ FeNCS2+(aq) |
| Initial conc./ *M*: |  |  | 0 |
| Change in conc. at equilibrium/ *M*: |  |  |  |
| Equilibrium conc./ *M*: |  |  |  |
| Value of *K*c (no units) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Test Tube E5

|  |  |
| --- | --- |
|  |  Fe3+(aq) + SCN−(aq) ⇌ FeNCS2+(aq) |
| Initial conc./ *M*: |  |  | 0 |
| Change in conc. at equilibrium/ *M*: |  |  |  |
| Equilibrium conc./ *M*: |  |  |  |
| Value of *K*c (no units) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Mean *K*c \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## Post-Lab Questions

1. Each of the five equilibrium solutions had a different color, due to different amounts of FeNCS2+ being present. Were the values of the equilibrium constants reasonably “constant”?