Topic 9 – Kinetics and Equilibrium

Lesson 1 – Kinetics

Terms to Know

Kinetics –

Rate –

Collision Theory –

Effective Collision –

Activation Energy –

Catalyst –

Mechanism –

Factors that Affect Reaction Rates

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| Factor | Effect on Rate and Why | Example |
|  Concentration |  Rate due to in effective collisions between reacting particles | Mg + HClReaction faster in 2M HCl than in 1M HCl |
|  Temperature |  Rate due to in kinetic energy of particles and frequency of effective collisions | AgNO3 + KI will be faster at 50°C than at 40°C |
|  Pressure |  Rate of gases because there will be in concentration (due to dec. in volume) | N2 + 3H2 🡪 2NH3 will occur at faster rate at pressure of 101.3 kPa than at 78 kPa |
|  Surface Area |  Rate because there will be in the number of exposed areas for more effective collisions to occur | HCl will react faster with powdered Mg (more surface area) than with Mg ribbon (less surface area) |
| Adding Catalyst |  Rate because catalyst activation energy (lower energy pathway) for the reaction |  |
| Nature of Reactants | Ionic solutions react fast because there is no bond breakingMolecular substances react slowly because strong covalent bonds have to be broken in the moleculesSome metals react faster than others | AgNO3 + KCl is very fast because it involves two ionic solutionsReaction of H2 and I2 (molecular) is slow because bonds have to be broken and reformed |

