Research Experiences for Teachers (RET)
Center for Pre-College Programs
New Jersey Institute of Technology

MODULE TEMPLATE

TOPIC:
Chemical Reactions

STANDARD(S) & INDICATOR(S):

- **5.1.12.B.3:** Revise predictions and explanations using evidence, and connect explanations/arguments to established scientific knowledge, models, and theories.
- 5.2.12.A.5 Describe the process by which solutes dissolve in solvents.

OBJECTIVE(S):

- Analyze the effect of particle size on the rate of a chemical reaction

BACKGROUND INFORMATION:
5 factors affect chemical reactions:

- Particle size
- Surface area
- Pressure
- Temperature
- Presence of catalysts

MATERIALS:
Powdered, solid dosage and broken pieces of Alka Seltzer Antacid.

CLASSROOM ACTIVITY DESCRIPTION (LABORATORY/EXERCISES/PROBLEMS) including detailed procedures:
Lab on "Comparing the dissolution of powdered and solid Dosage Alka Seltzer drugs."
Ask students for their perspective with respect to how particle sizes of certain medications can influence the rate at which they work or target the active spots of the diseases for a faster reaction in a human body. Particle sizes of various measurements in milligrams, micrograms and nanograms are shown via the Smart Board and students were asked to predict the one that will work faster with reasons in terms of dissolution. After this, they then carry out a laboratory activity (30 MINUTES),using powdered, solid dosage and broken pieces of Alka Seltzer Antacid to prove / support their prediction(Hypothesis).

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SAMPLE QUESTIONS TO ELICIT CLASS DISCUSSION:

Essential Questions**:**

- What is a chemical reaction?
- What are the various 5 classes of chemical reactions and their characteristics?
- What are the factors affecting chemical reactions?

PARAMETERS TO EVALUATE STUDENT WORK PRODUCTS:

Students compare the dissolution of powdered and solid Dosage Alka Seltzer drugs, based upon their experimental results.

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