

## INSPIRE GK12 Lesson Plan



<b>Lesson Title</b>	Chemical Bonding
<b>Length of Lesson</b>	One (50 minute) class period
<b>Created By</b>	Will McBryde, Rob Thornton, Bo Cherry
<b>Subject</b>	General Science
<b>Grade Level</b>	8 <sup>th</sup> grade
<b>State Standards</b>	8 <sup>th</sup> : 1b, d (Inquiry); 2a (Physical Science)
<b>DOK Level</b>	DOK 3
<b>DOK Application</b>	Participate, Investigate, Compare
<b>National Standards</b>	5-8: A (Inquiry); B (Physical Science)
<b>Graduate Research Element</b>	Chemical elements and bonds are the basis for the formulation of minerals. Elements makes up minerals and minerals make up rocks.

### **Student Learning Goal:**

#### MS 8th Grade:

(Inquiry) 1(b) Distinguish between qualitative and quantitative observations make inferences based on observations. (d) Analyze evidence that is used to form explanations and draw conclusions; 2 (a) Identify patterns found in chemical symbols, formulas, reactions, and equations that apply to the law of conservation of mass.

#### National Science Education Standards of Content 5-8:

(Inquiry - A) Abilities necessary to do scientific inquiry, Understandings about scientific inquiry; (Physical Science - B) Properties and changes of properties in matter

### **Materials Needed (supplies, hand-outs, resources):**

PowerPoint file (INSPIRE\_McBryde\_02.01.11\_PP); laptop; projector, pipe cleaners (two colors)

### **Lesson Performance Task/Assessment:**

This lesson is an introductory lesson into chemical bonds to inform students of the basics. Students will observe a PowerPoint presentation presented by the instructor. Questions will be asked throughout the PowerPoint to keep the students engaged. After the PowerPoint presentation inferences about how students can get jobs in Mississippi's chemical industry will be made to excite the students about potential career opportunities.

### **Lesson Relevance to Performance Task and Students:**

The PowerPoint presentation will educate students about the three main types of chemical bonds (i.e. ionic, covalent, metallic). The lesson will also demonstrate to students how to read lewis dot diagrams to determine the type of bond present. The lesson will also keep the material relevant by telling students about the future opportunities that would be available to them if they chose a profession in the field of chemistry.



**Anticipatory Set/Capture Interest:**

The pipe cleaner activity will allow students to create a water molecule. Each student will be given two purple pipe cleaners and one gold pipe cleaner (any color will do, we used our school colors). Students will be told the gold pipe cleaner is the oxygen atom and the purple pipe cleaners are the hydrogen atoms. The students are instructed to create a water molecule. Students should bend the gold pipe cleaner into a circle tie it off and then should attach both of the purple pipe cleaners to it. See example below for visual representation.



**Guided Practice:**

The PowerPoint presentation on Mississippi's chemical bonds will be guided.

**Independent Practice:**

Students participation in the capture activity will be done individually. The students will simply be told to create a water molecule, this allows for student inquiry. During the PowerPoint lecture students will take notes on keywords from each slide.

**Remediation and/or Enrichment:**

Remediation- Individual IEP; PowerPoint will be made available to resource teacher;  
Enrichment - Have students research a career in the chemistry industry they would like to have.

**Check(s) for Understanding:**

Observe students participation during capture activity. Observe students during PowerPoint presentation. Ask students questions.

**Closure:**

Question 1: What impact does chemistry have on you?

Question 2: What are the three different types of chemical bonds?

**Possible Alternate Subject Integrations:**

Physics, Math

**Teacher Notes:**

This lesson could apply to all middle school grades. Simply regulate content.