# NHU/NASA Summer Institute

## Lesson Plan

Student Name Rachel Foster-Chambliss  Date 11/01/03

<table>
<thead>
<tr>
<th>Lesson Plan Title</th>
<th>The Great Light Detective</th>
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<tr>
<td>Grade Level</td>
<td>8th Grade Physical Science</td>
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<tr>
<td>Concept/Topic to Teach</td>
<td>Different light sources are comprised of different elements.</td>
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<td>Standards</td>
<td>Structure of Matter: 3.0 Elements have distinct properties and atomic structure. All matter is comprised of one or more of over 100 elements.</td>
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<td>General Goals</td>
<td>Students will understand that elements are not just names to memorize, but are actually used by astronomers and detectives to research information.</td>
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| Specific Objectives        | Matter is made up of atoms.  
|                            | Atoms are the smallest particles of an element  
|                            | Elements are found in a variety of light sources. |
| Required Materials         | Spectroscopes:  
|                            | May be made using the instructions from: How to Build a Spectroscope  
|                            | May be made with a spectroscope kit Purchased from RAFT in the green room. The kit ranges from $2.00 to 3.00.  
|                            | May be purchased from Stanford solar center [http://solar-center.stanford.edu/posters/colors.html](http://solar-center.stanford.edu/posters/colors.html). Teachers can get a class set for Classroom sets of the spectroscope posters, 45 posters per set along with diffraction gratings, can be sent to |
U.S. teachers for just the cost of shipping. The current shipping charge is $7.00 per classroom set.

- Sharp Scissors
- Transparent tape
- Straight edge

### Anticipatory Set
As students walk into class, there will be a spectrum of light shining on the projection screen. Students will be told that they are a detective and they have to figure out which element has taken over my overhead projector & projection screen.

### Step-by-Step Procedures
Students will have previously studied the following terms: *spectroscopy nucleus protons neutrons electrons visible light spectrum continuous spectrum absorption lines emission lines*

Students will make a spectroscoopes based on the directions that are in the kits they purchased. I think the spectroscoopes from the solar-center at Stanford work best.

They will go out and observe different light sources around the area. They will record their information on a worksheet that I have provided for them.

### Plan for Guided Practice
As a class we will make our own spectroscope. This will ensure that each child will be successful. We will go outside and use the sun and a white sheet to see which elements are found on the sun. REMEMBER DO NOT ALLOW STUDENTS TO LOOK DIRECTLY IN THE SUN WITH THEIR SPECTROSCOPES.

### Plan for Independent Practice
Students will take their spectroscoopes home and view the streetlights, their kitchen light and their porch lights, car lights and any other light they may find in their surroundings. They will color in what they see on their worksheet and name the element found in the light source.

### Assessment (based on objectives)
Students will be asked the same question on which element has taken over my overhead projector and projection screen. They will have to become a detective and describe which steps would be necessary to figure out the problem. The will have to be as specific as possible.

### Adaptations (ELL students or special populations)
- The spectroscope might have to be pre-cut for students that have fine motor difficulties.
- It might be helpful to have a Para in the classroom to assist with the students that are
• As independent practice, students will have a worksheet to find out which absorption spectrum contains a certain element, which is located at [http://teachspacescience.org//graphics/pdf/10000821.pdf](http://teachspacescience.org//graphics/pdf/10000821.pdf).

| Extensions (for gifted students) | Students will research what is a rainbow and how it relates to a spectroscope. |