

NHU/NASA Summer Institute

Lesson Plan

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

Lesson Plan Title	The Great Light Detective
Grade Level	8 th Grade Physical Science
Concept/Topic to Teach	Different light sources are comprised of different elements.
Standards	Structure of Matter: 3.0 Elements have distinct properties and atomic structure. All matter is comprised of one or more of over 100 elements.
General Goals	Students will understand that elements are not just names to memorize, but are actually used by astronomers and detectives to research information.
Specific Objectives	<ul style="list-style-type: none">• 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	<p>Spectroscopes:</p> <ul style="list-style-type: none">• May be made using the instructions from: <u>How to Build a Spectroscope</u>• 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 <u>http://solar-center.stanford.edu/posters/colors.html</u>. 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

	<p>U.S. teachers for just the cost of shipping. The current shipping charge is \$7.00 per classroom set.</p> <ul style="list-style-type: none"> • 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	<p>Students will have previously studied the following terms: <i>spectroscopy nucleus protons neutrons electrons visible light spectrum continuous spectrum absorption lines emission lines</i></p> <p>Students will make a spectroscopes based on the directions that are in the kits they purchased. I think the spectroscopes from the solar-center at Stanford work best.</p> <p>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.</p>
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 spectroscopes 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. They will have to be as specific as possible.
Adaptations (ELL students or special populations)	<ul style="list-style-type: none"> • 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

	<p>having difficulty.</p> <ul style="list-style-type: none">• 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.
Extensions (for gifted students)	Students will research what is a rainbow and how it relates to a spectroscope.