

Atomic Spectrum Lab

What can light teach us about the composition of the stars?

By mass the composition of the sun is 75 percent hydrogen and 25 percent helium. Various elements (oxygen, carbon, nitrogen, argon, etc) make up less than 0.1 percent of the mass of the sun. How do they know that?

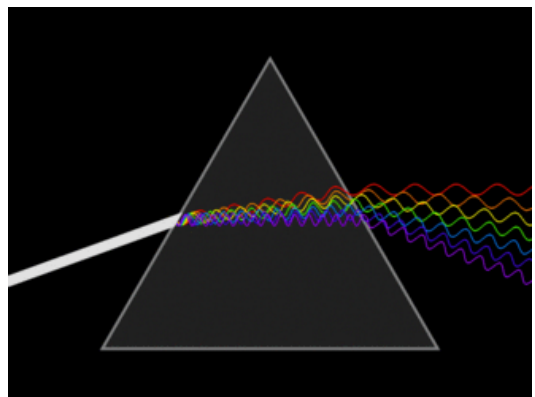
Elements and the Stars:

Every element on the periodic table gives off light when heated but the type of light and colors of light are different for each element.

Every star is a burning mass of elemental gas. The elements are fusing together (nuclear fusion) to make new elements. When this happens, they give off the type and color of light for the elements that exist in the star.

Spectroscopy:

If we shine light through a prism, it breaks up into the various colors present in that light. White light, for example, has all the colors of the rainbow (ROYGBIV). If we heat up gases of elements so they give off light, we can shine that light through a prism and see what colors are present in that light - this is called spectroscopy.



Analyzing the stars:

If we look at a distant star through a prism (or through spectroscope) the star's light will be broken up into the colors that are present in the star - and, if we can see the different colors, we can figure out which elements are giving off those colors - which means we can figure out exactly what elements are IN THE STAR! WHOA!

Hydrogen



Helium



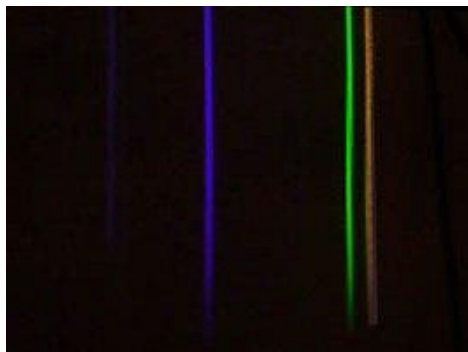
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Procedure:

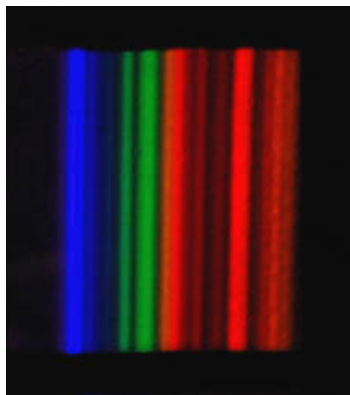
Use the spectral lab ([click here](#)) to complete the activity.

Using your spectral lab worksheet, identify the three elements by comparing your data with the following:

Mercury:



Argon:



Neon:

