

## Physics: A World in Motion: Atomic Spectra<sup>1</sup> (DVD) Teacher Notes

**1) Where Does Energy from the Auroras come from?** From the sun, or more specifically the Solar Wind, which excites the gases in the Earth's atmosphere. The aurora light is the characteristic spectrum of the gases in the atmosphere.

**2) What are the three parts found in a neon sign?**

- (a) The glass tube
- (b) The electrode
- (c) The gas

**3) What is a diffraction grating?** A diffraction grating is an instrument that is used to "spread out" spectra so that you can determine the wavelength of the absorbed or emitted light.

**4) What two names are given to spectrum with bright lines?**

- (a) Line spectrum
- (b) Emission spectrum.

**5) What do you call a spectrum that looks like a rainbow?** Continuous Spectrum

**NOTE: FAST FORWARD THROUGH THE MATH EXPLANATION!!!!**

**6) What type of spectrum should a filament bulb produce?** Continuous Spectrum

**7) What do Fraunhofer Lines tell us about the sun and other stars?**

- (a) Chemical Composition of Outer Sun
- (b) Temperature and radiovelocity of Stars

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**8) What are the three types of radiation discovered by Rutheford?**

- (a) Alpha
- (b) Beta
- (c) Gamma

**9) Why is Rutheford's model called the planetary model?** Because electrons orbiting a dense nucleus is similar to planets orbiting the sun

**10) Why are neon signs useful?** They have a range of colors, which is determined by the chemical gas used. This color can be used to help determine the chemical composition of signs and stars.

**11) How do we know what stars are made of?** Each element and each molecule has a unique arrangement of electrons, which is like its fingerprint. This is how we know what the stars and planets are made out of.