

☑ Model light passing through an exoplanet atmosphere



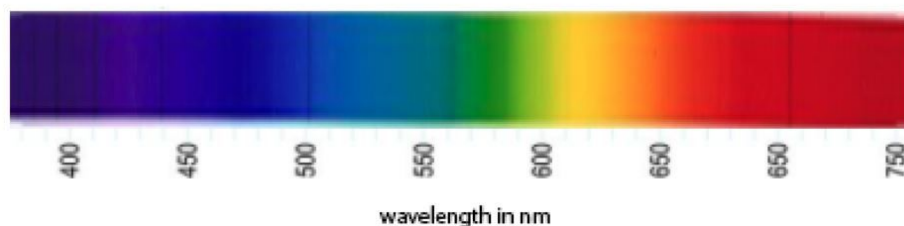
Artists rendition of K2-18b the star it orbits

Scientists discovered a new exoplanet called K2-18b, going around a star that is 110 light-years away from our solar system.

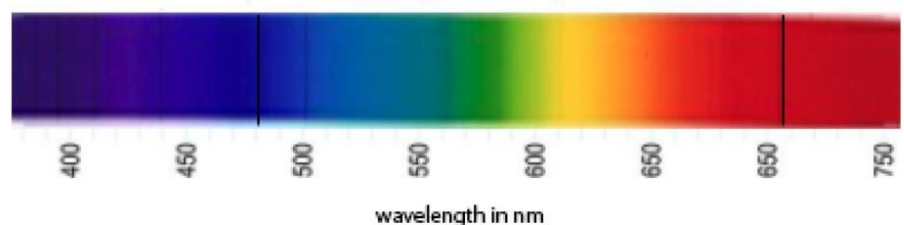
In order to determine what the planet was made of, the scientists measured how much of each color of light was hitting the telescope. They noticed that when they did this, it seemed like there was much less green light than blue or red light during the transit.

Scientists took all the light data from the star and broke them up to create two spectra. The first spectrum was taken when the planet was behind the star, and the second was taken when the planet was transiting in front of the star.

This was the spectrum when the planet was behind the star.



It looked like this when the planet was transiting the star.



1. Which wavelengths of light are missing when the planet transits in front of the star?

2. Make a diagram to explain why these colors are missing when the planet transits.

3. Using the chart below, what do you predict the planet might be made out of? Explain why you chose your answer.

Type of atmospheric gas	Wavelength of light absorbed
hydrogen, H ₂	656 nm
methane, CH ₄	700 nm
carbon dioxide, CO ₂	> 700 nm
water vapor, H ₂ O	481 nm
oxygen, O ₂	< 380nm
carbon, C	510 nm