

## **Project Spectra!**

### **Using Spectral Data to Explore Saturn and Titan**

#### **Group 3 Reflection**

#### LEARNING GOALS

- correlate spectral data to chemical composition (use light = chemistry)
- use REAL data for discovery!

#### MISCONCEPTIONS

- have to touch it to know what it is
- white light can't be made up of all colors of the rainbow
  - it's a small part of EM spectrum
- stuff "out there" in the universe is made of different materials than what we have on earth

#### HIGHLIGHT ACTIVITY

- using EM spectra to identify chemical composition of Saturn's rings and Titan's atmosphere
- compare known benchmarks to unknown
- background information supplied by actual mission video
- critical thinking questions about
  - abundance of H in universe
  - atmosphere of Titan vs. Saturn's rings
  - compare Earth vs. Titan

#### ATLAS INSIGHTS

- 4F-2: things are visible to eye when light waves are emitted or reflected
- 6-8: about 100 known elements of which EVERYTHING of the universe is made of
- use of technology is essential to science (remote sensing)
- gravity of a more massive object like Titan will influence the type of atoms trapped by its atmosphere vs. a debris field like Saturn
  - $F = GMm/R^2$

#### TEACHER VIEW

- reinforces idea that light is information
- integrates technology (computer videos engage interest)
- easy, real-world, real-data learning opportunity
- CHEAP!!!
- Using standards of comparison to analyze data and draw conclusions

#### STUDENT VIEW

- videos are captivating
- makes use of spectrograph easy to understand
- de-mystifies how scientists "know" what they know
- gives credibility because it's real data