

WORKSHEET
Science on Saturday

Laser-Plasma Accelerators: Riding the Wave to the Next Generation X-Ray Light Source

Video Link:

[Riding the Wave to the Next Generation X-Ray Light Source](#)

Presenters:

Félicie Albert – LLNL Scientist

Dan Burns - Science Teacher - Los Gatos High School

Student Lecture Notes:

1. List at least 2 things particle accelerators are used for below.

2. How many carbon atoms are in a one carat diamond?

3. What type of light has a shorter wavelength than x-rays, gamma rays or ultraviolet light?

4. A particle _____ emits radiation along its path.

6. What is one thing that synchrotrons and x-ray free electron lasers have in common?

7. What is one advantage of laser wakefield accelerators over synchrotrons and x-ray free electron lasers?

8. A plasma contains positively charged _____ and negatively charged _____ .

9. What does a boat travelling through water and a laser travelling through plasma have in common?

10. Synchrotrons and x-ray free electron lasers use magnets to wiggle electrons and create x-rays. What do laser wakefield accelerators use to wiggle the electrons?

11. Laser wakefield accelerators have _____ x-ray wavelengths and are _____.

12. What is radiography?