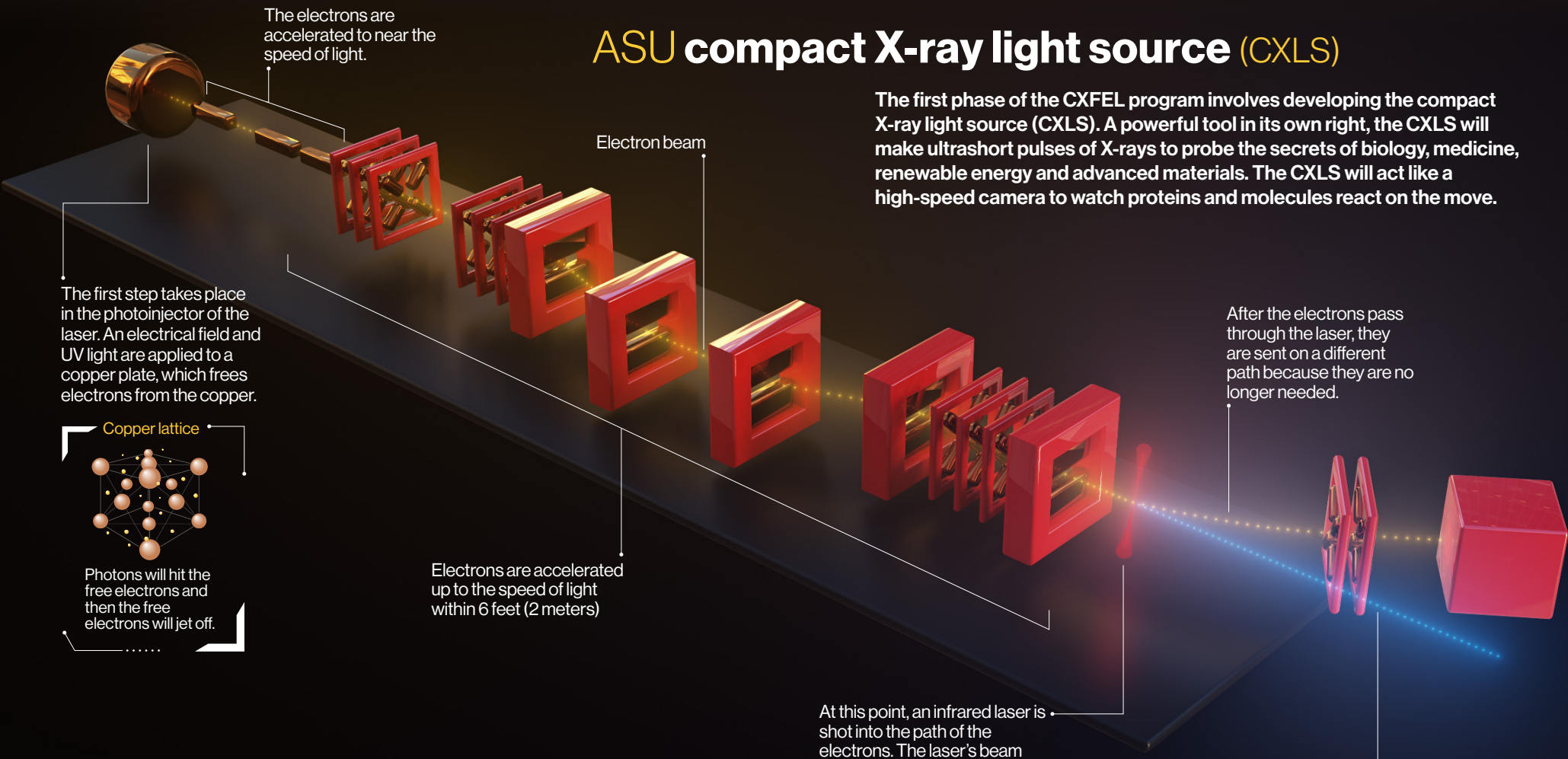


# ASU compact X-ray light source (CXLS)

The first phase of the CXFEL program involves developing the compact X-ray light source (CXLS). A powerful tool in its own right, the CXLS will make ultrashort pulses of X-rays to probe the secrets of biology, medicine, renewable energy and advanced materials. The CXLS will act like a high-speed camera to watch proteins and molecules react on the move.



The electrons are accelerated to near the speed of light.

The first step takes place in the photoinjector of the laser. An electrical field and UV light are applied to a copper plate, which frees electrons from the copper.



Electron beam

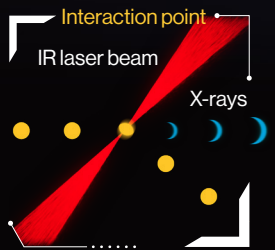
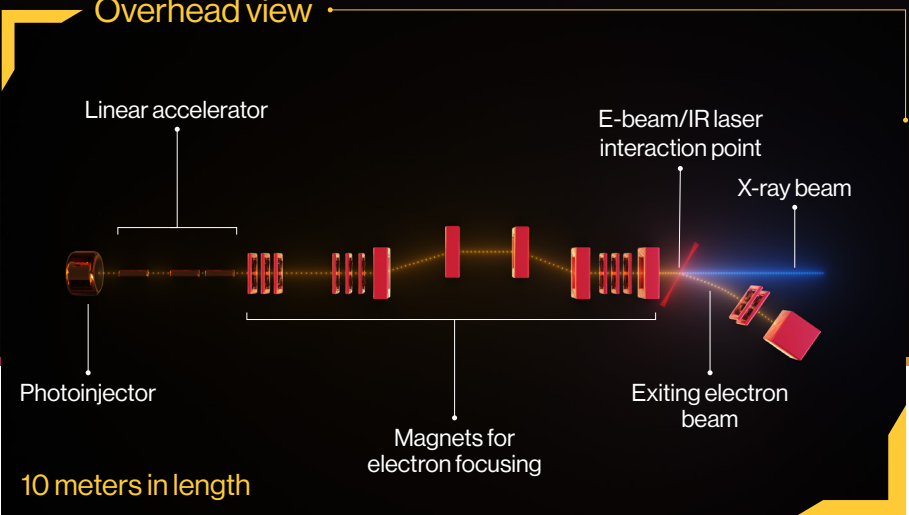
Electrons are accelerated up to the speed of light within 6 feet (2 meters)

After the electrons pass through the laser, they are sent on a different path because they are no longer needed.

At this point, an infrared laser is shot into the path of the electrons. The laser's beam wiggles the electrons, causing them to emit a powerful X-ray.

These powerful X-ray pulses can now be used to resolve proteins and other molecules.

## Overhead view



10 meters in length