



The Stuff of Neon and TVs (Plasma Technology)

Plasma (*ionized gas*) is the most common form of matter in the universe. Along with solid, liquid, and gas, plasma is the fourth state of matter. Its characteristic properties are sufficiently different from gas to be considered a separate state of matter.

Stars contain plasma, as does much of the interstellar space. Because stars generate enormous amounts of energy through plasma fusion, scientists realized this could be a potential source of electricity. Plasma generators may be the best choice for future, long-term, sustainable production. They use readily available gases for fuel and don't produce environmentally damaging waste products.

In our sun and other stars, two hydrogen atoms fuse to form one helium atom plus energy. Gravity traps and compresses the gases to produce plasma. On earth, powerful magnets confine the gas. Then lasers or other high-energy particles compress the resulting gas and plasma. Current research is duplicating this using deuterium and tritium isotopes of hydrogen.

Other places where plasma technology is used include neon lights, because neon gas is also a form of plasma. Plasma generators and plasma televisions are very different applications of plasma technology. One big advantage of plasma technology is that the necessary hydrogen fuel is generally considered inexhaustible. Also, there are no greenhouse gases or radioactive waste products to worry about. As more research is conducted and new ideas are tested, plasma applications may include products not yet imagined.

Questions for research:

- What are some new jobs created by plasma technology?
- How might future plasma inventions change how you live?
- What are some of the problems facing plasma scientists?

Research Ideas

Ionization, neon lights, plasma display panel