

**Semiconductors** A class of materials called semiconductors can change from being an insulator to being a conductor and back to an insulator again. Engineers produce extrinsic semiconductors by doping, which is the addition of minute amounts (typically 1 part in  $10^6$ ) of other materials that can act as electron donors or electron receptors. If the doping substance acts as an electron receptor, the hole left behind by an electron that attaches to a receptor can also travel through the semiconductor and acts as an effective positive charge carrier. Gordon Moore, cofounder of Intel, famously stated that due to advancing technology, the power of the average computer's CPU (central processing unit) doubles every 18 months, which is an empirical average over the last 5 decades. Examples of intrinsic semiconductors are chemically pure crystals of gallium arsenide, germanium, or, especially, silicon. This doubling phenomenon is known as Moore's Law.