Figure 1.3 A variety of complex ceramic components including impellers and blades, which allow turbine engines to operate at higher temperatures and so with greater efficiency.Advanced aircraft and aerospace vehicles rely heavily on composites such as carbon fibre reinforced polymers (Figure 1.7), and Kevlar reinforced polymers.(Courtesy of CTS Corporation) Semiconductors Although silicon, germanium, and a number of compounds such as gallium arsenide (GaAs) are very brittle, they are essential for electronic, computer, and communication applications.The electrical conductivity of these materials can be controlled to enable their use in electronic devices such as transistors, diodes, and inte- grated circuits (Figure 1.6).(Courtesy of Certech, Inc) Figure 1.4 Polymerisation occurs when small molecules, represented by the circles, combine to produce larger molecules, or polymers.Figure 1.5 Polymers are used in a variety of electronic devices, including these computer dip switches, whert moisture resistance and low conductivity are required.now being transmitted by light through fibre-optic systems, semiconductors, which convert electrical signals to light and vice versa, are essential components in these systems.(Courtesy of Rogers Corporation) Composite Materials Composites are formed from two or more materials, producing properties not found in any single material.Figure 1.6 Integrated circuits for computers and other electronic devices rely on the unique electrical behaviour of semiconducting materials.Information.

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