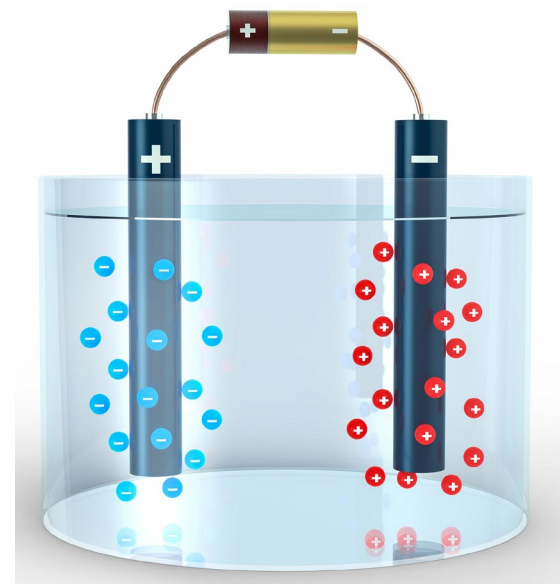


Turning scrap metal into hi-tech steel

Read the full article at rsc.li/3oiPDZt

Ultra-low carbon steels are used in car body panels or precision alloying in automotive and electronics industries. However, much of the scrap steel being recycled is relatively high-carbon 'hard' steel. Conventional recycling melts scrap steel in an electric arc furnace with a reagent mixture called a slag to remove the impurities.

A new process to create ultra-pure low-carbon steel has been developed by electrochemically removing carbon from steel during recycling. By using molten slag as an electrolyte, the carbon content of molten iron was reduced from 3.78% to 0.84%. Carbon in the molten iron anode is oxidised by oxygen from silicon dioxide in the slag, producing carbon monoxide which bubbled out, with silicon ions reduced at the molybdenum cathode.



Electrolysis: an electric charge passing between an anode and cathode

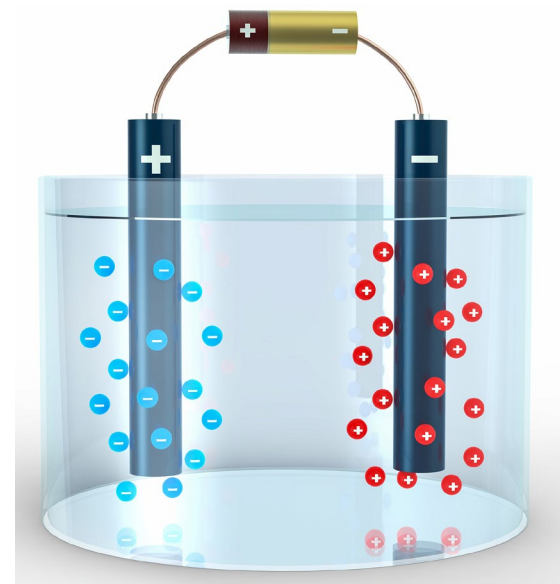
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1. What is an alloy?
2. Explain why alloys are harder than pure metals.
3. Describe the differences in properties of high-carbon and low-carbon steel.



Electrolysis: an electric charge passing between an anode and cathode