

Fuel Cell Technology – 20 years from now

Technological improvements

-better O₂ reduction catalyst

- Reduced activation losses
- Lower cost

-better membrane

- Higher conductivity
- No water required
- Lower cost

-Hydrogen storage

- Higher storage density

Material science
& engineering

Engineering
disciplines

Product improvements

-fuel cells become expendable (but recyclable)

-fuel cells used in cars, homes, distributed power generation,

Fuel cells cause energy revolution

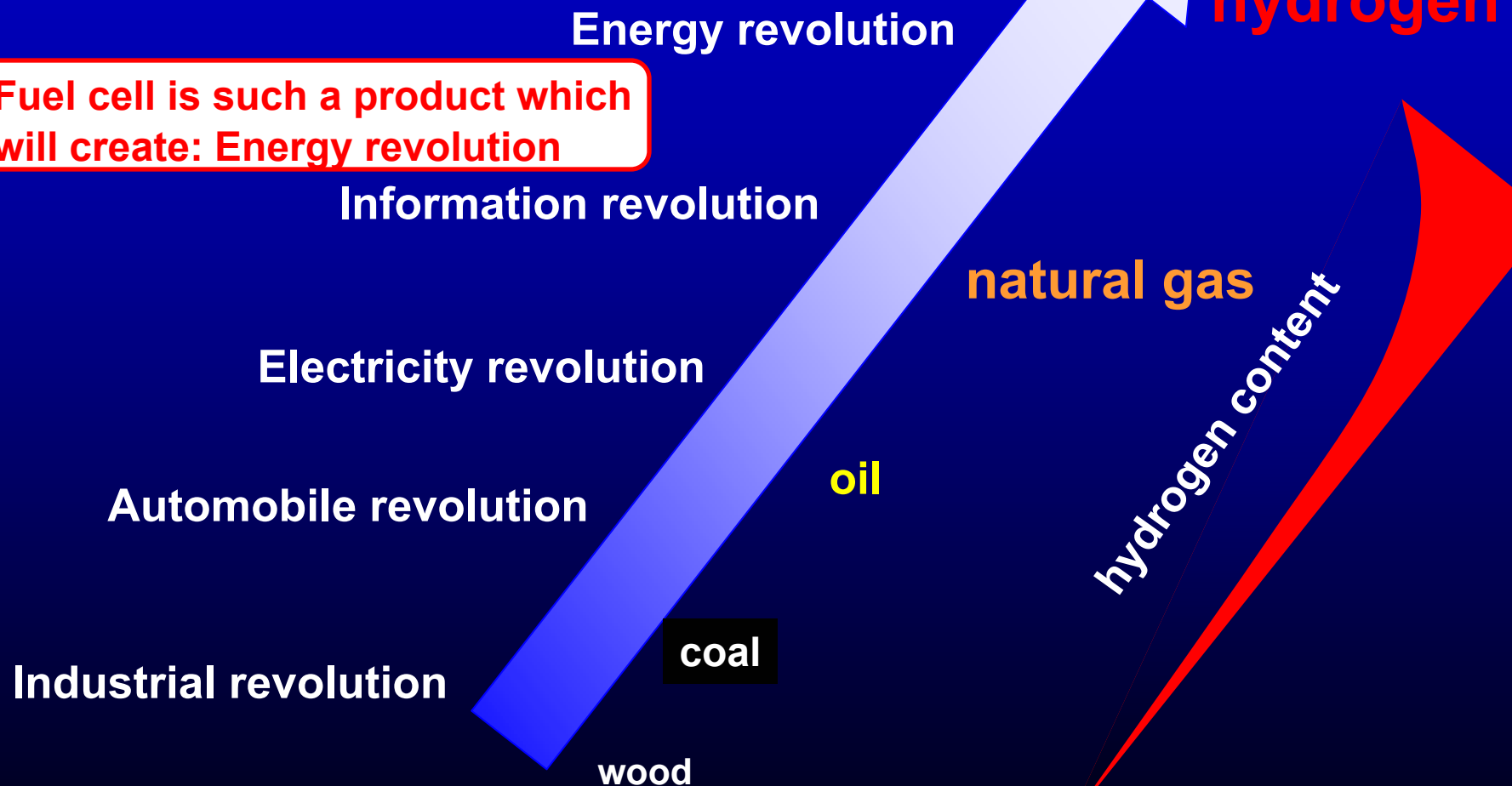
Hydrogen economy is on its way

Evolution of modern civilization

Each revolution started with an invention (product or service), which created:

- Change of lifestyle
- New products and services

Fuel cell is such a product which will create: Energy revolution



Powerful quote

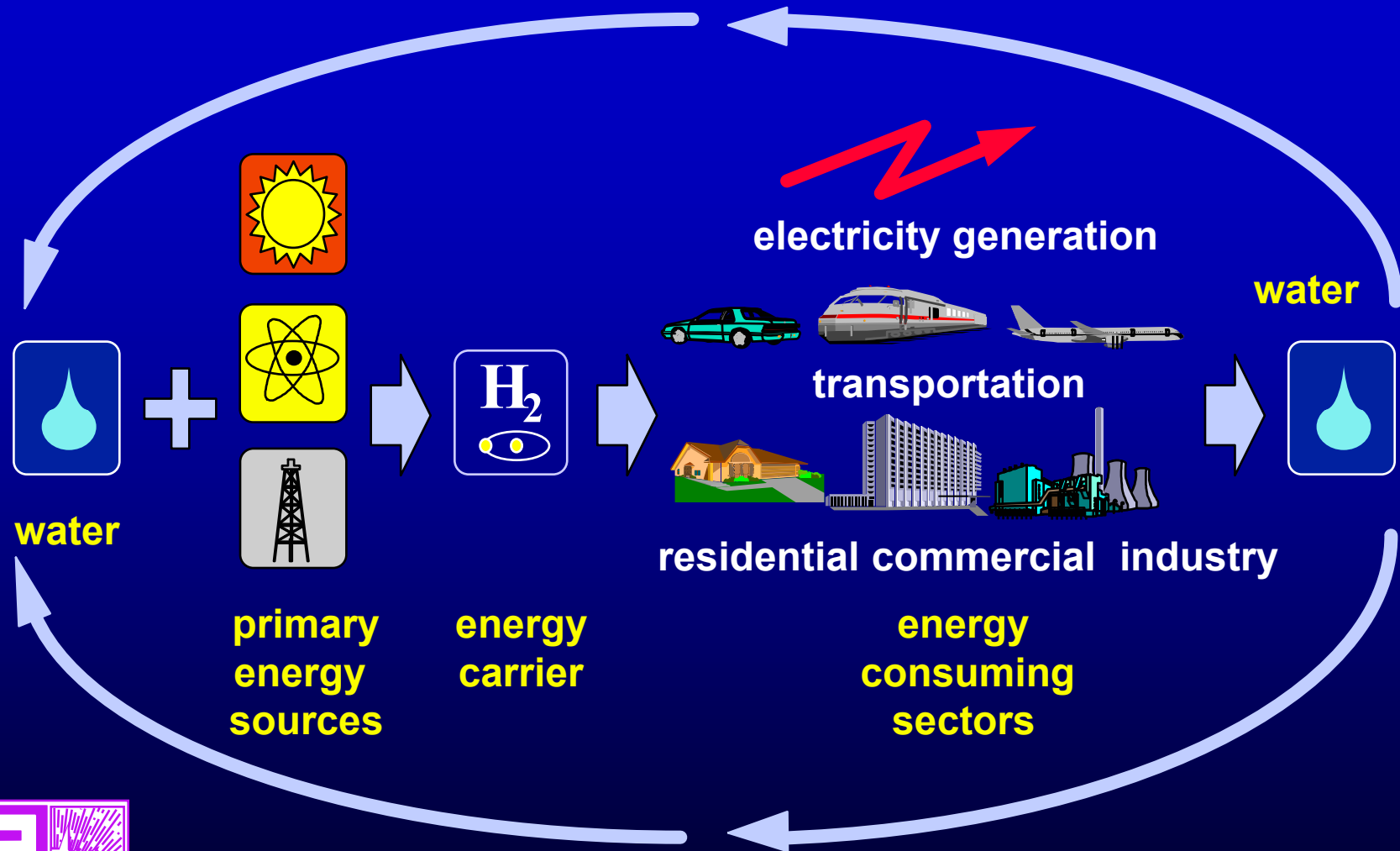
... water decomposed into its primitive elements ... and decomposed doubtless, by electricity, which will then have become a powerful and manageable force ... Yes my friends, I believe that water will one day be employed as fuel, that **hydrogen** and **oxygen** which constitute it, used singly or together, will furnish an inexhaustible source of heat and light, of an intensity of which coal is not capable.

... As long as the earth is inhabited it will supply the wants of its inhabitants, and there will be no want of either light or heat as long as the productions of vegetable, mineral and animal kingdoms do not fail us. I believe, then, when the deposits of coal are exhausted we shall heat and warm ourselves with water.

Water will be the coal of the future.

Jules Verne, *Mysterious Island*, 1874

Hydrogen Energy System



international association for hydrogen energy

www.iahe.org