

Tanta University
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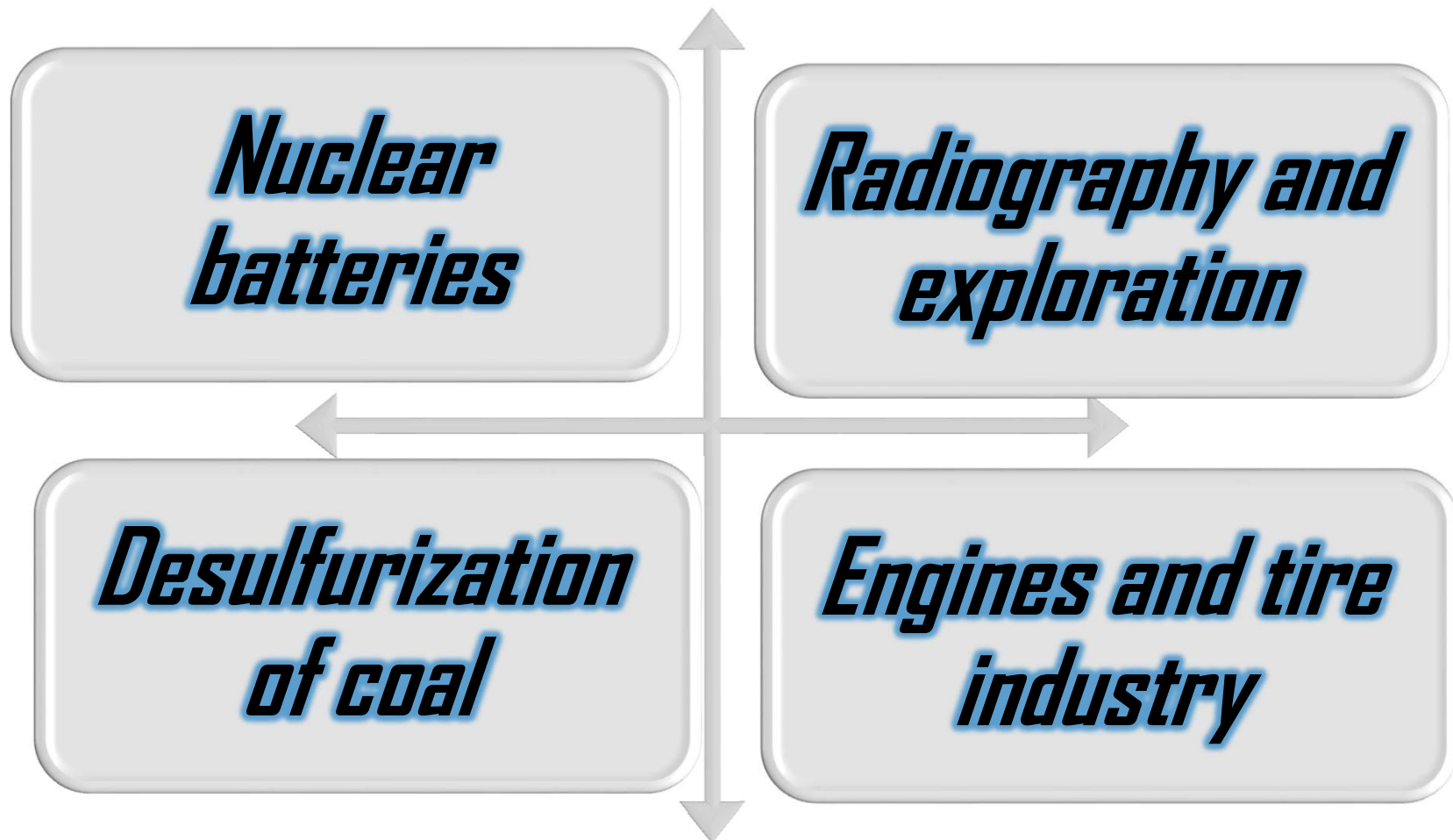
Industrial Applications of radioisotopes: Nuclear batteries

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APPLICATIONS OF RADIOISOTOPES IN INDUSTRY



Radiography and exploration based on the ionizing radiation resulting from isotopes.

Engines and tire industry depends on the mixing radioactive isotopes with alloys that makes them automobile engines or aircraft .

Desulfurization of coal depends on out gamma rays from cobalt-60 these rays reduced the sulfur content from coal by 80% to coal containing 2-3% sulfur.


Nuclear batteries based on the generation of electricity from fission isotopes.

Nuclear batteries

Nuclear batteries are called atomic batteries, tritium batteries and radioisotopes generators.

These batteries are used to describe devices which use energy from the decay of a radioactive isotope to generate electricity, like nuclear reactors they generate electricity from atomic energy, but differ in that they do not use a chain reaction.

Differences between nuclear batteries and the other batteries



Nuclear batteries are highly expensive but have extremely long life and high energy density.

They are mainly used as power sources for equipment that must operated for long time *such as spacecrafts.* They using the energy of radioisotope decay to provide long-lives power (*10-20 year*).

Radioisotopes batteries produces electric energy through radioactive decay for radioactive substance, where continues thermal energy generated by radioactive decay to produce electricity by thermocouples group. it work with plutonium-239 which produce Alfa particle accompanied by the come out heat .

