

AIM: How is matter and energy classified based on its quality?

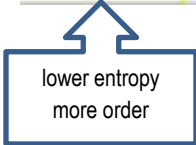
MATTER QUALITY:

how useful matter is based on availability and concentration

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| <p>1. High Quality</p> <ul style="list-style-type: none"> • organized • concentrated • easier to extract • found near surface | <p>2. Low Quality</p> <ul style="list-style-type: none"> • disorganized • dilute • difficult to extract • deep underground or dispersed in air/water |
|---|--|



ENTROPY: measure of the amount of disorder in a system



ENERGY QUALITY: measure of an energy source's ability to perform useful work

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|--|--|--|----------------|---------------------------------|--------------------|-----------------------------|
| <p>1. High Quality - organized, concentrated, useful</p> <p>Examples</p> <table> <tr> <td>a. electricity</td> <td>d. nuclei in radioactive elements</td> </tr> <tr> <td>b. coal</td> <td>e. concentrated sunlight</td> </tr> <tr> <td>c. gasoline</td> <td>f. concentrated heat</td> </tr> </table> | a. electricity | d. nuclei in radioactive elements | b. coal | e. concentrated sunlight | c. gasoline | f. concentrated heat |
| a. electricity | d. nuclei in radioactive elements | | | | | |
| b. coal | e. concentrated sunlight | | | | | |
| c. gasoline | f. concentrated heat | | | | | |
| <p>2. Low Quality - disorganized, dispersed</p> <p>Example: heat dispersed in the atmosphere or ocean</p> | | | | | | |

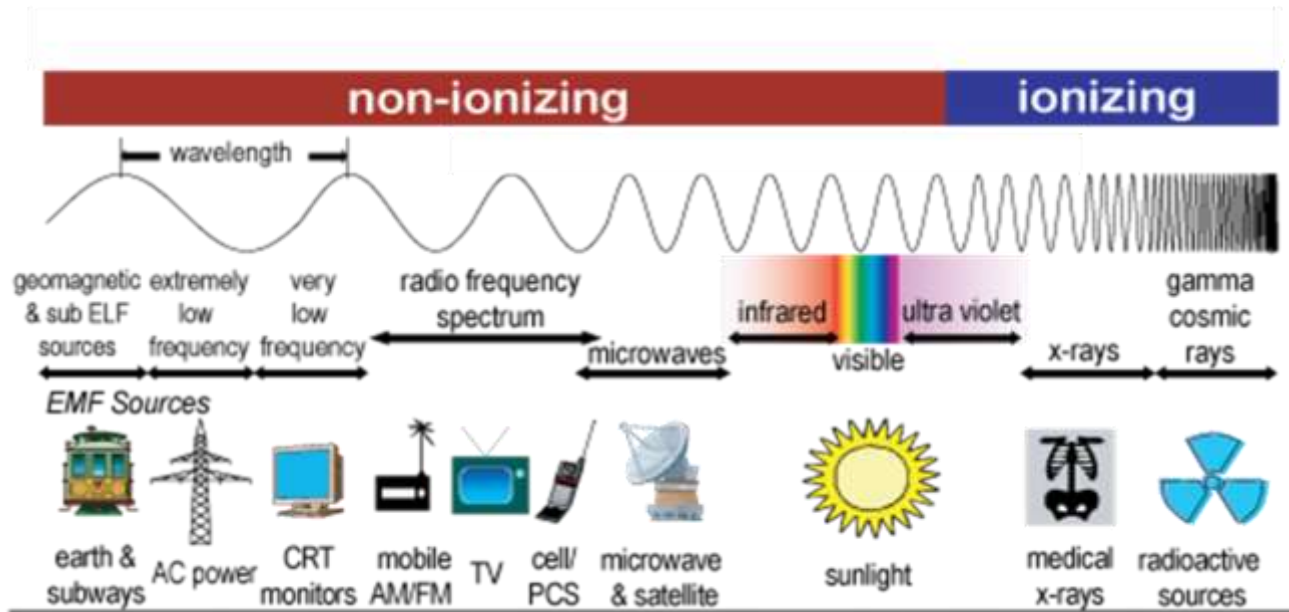
FORMS OF ENERGY:**1. Chemical Potential Energy is stored energy**

Examples

- a. chemical bonds of glucose (carbohydrates)
- b. chemical bonds of fossil fuels
- c. nuclei of radioactive elements

2. Kinetic Energy is energy in motion

Electromagnetic Radiation: **form of kinetic energy consisting of oscillating transverse waves**

THE ELECTROMAGNETIC SPECTRUM

Ionizing Radiation: radiation with enough energy to knock electrons from atoms and make them positive ions

- dangerous to living cells
- damages DNA
- potential carcinogen