Lecture 17 | First Law of thermodynamics

Note Title

Chemical Kinetics: How fast?

Thermodynamics: Will a rxn occur?

$C_{(diamond)} \rightarrow C_{(graphite)}$ .. Spontaneous. Lost lubricant

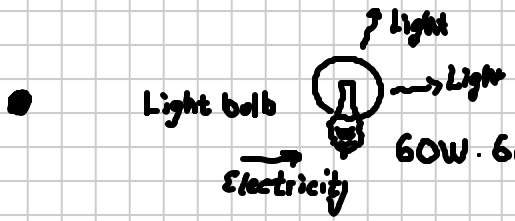
3 Laws of Thermo

1st Law: Conservation of Energy:

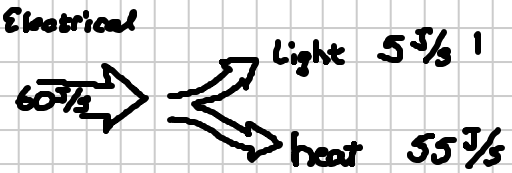
Energy not lost/destroyed.. does change form.

Energy Conversion Device: Lighting : Lightbulb

Electrical → light.

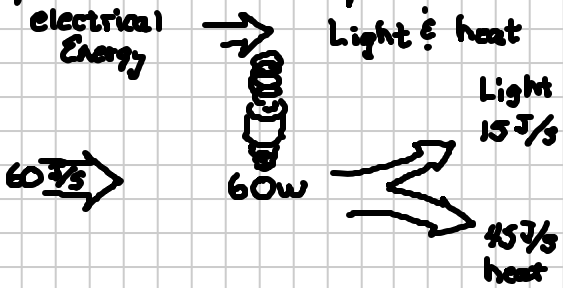


60W · 60 J/sec every sec, consumes 60J energy.



Conversion eff $\frac{5 J_{light}}{60 J_e} \cdot 100 = 8.3\%$ eff

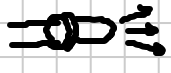
- Compact fluorescent Lamp:



Conv Eff $\frac{15 J_{light}}{60 J_{elect}} = 25\%$ eff

Hg ... disposed of properly:

- Light emitting diodes (LED)



50%

more expensive / Long lifetime