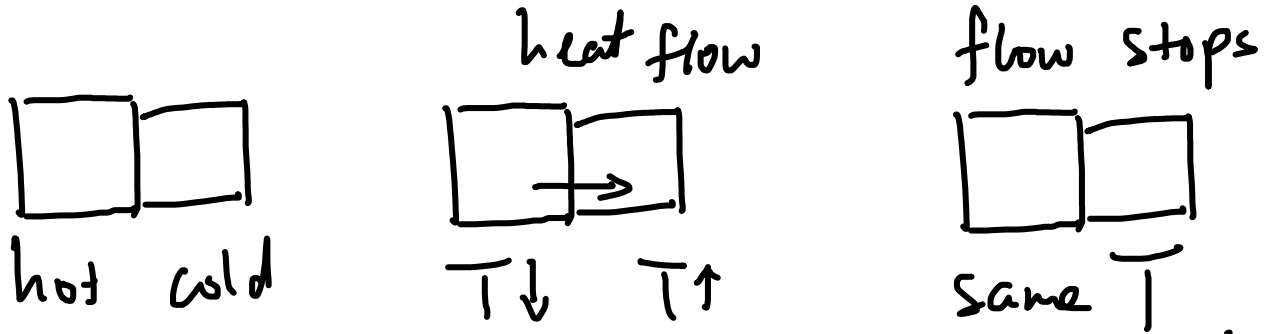


show understanding that thermal energy is transferred from a region of higher temperature to a region of lower temperature

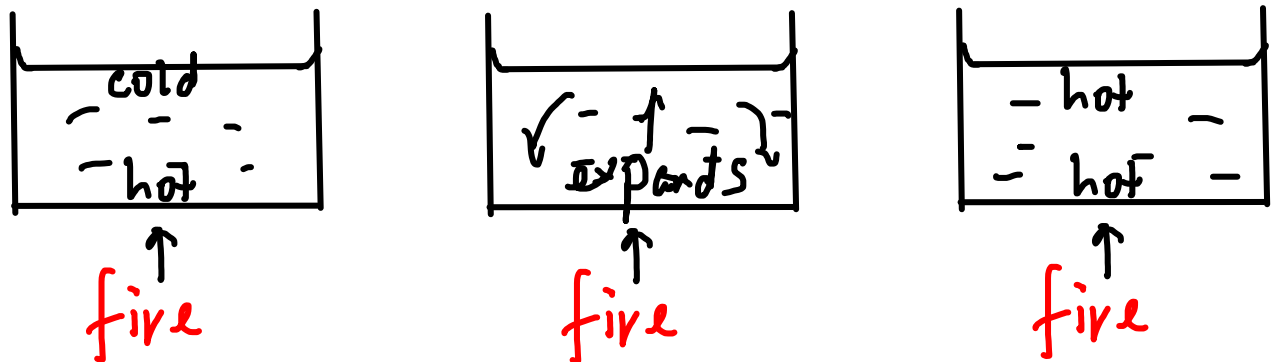
# Thermal Energy Transfer

Dr K M Hock

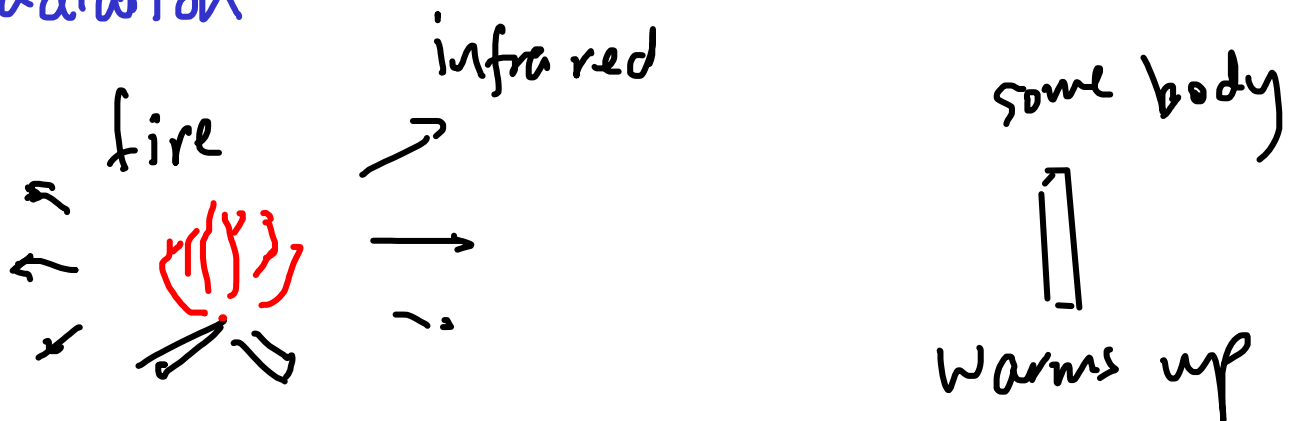
## Conduction



## Convection



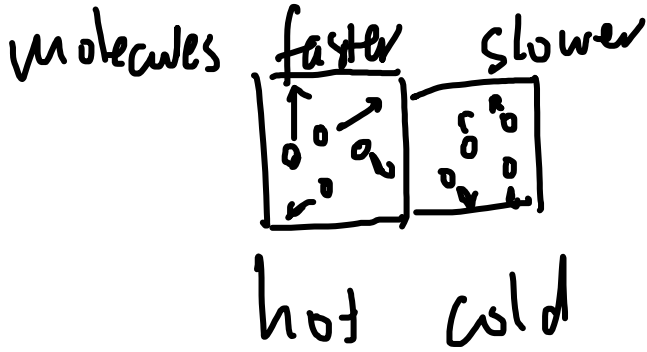
## radiation



Always from hot to cold.

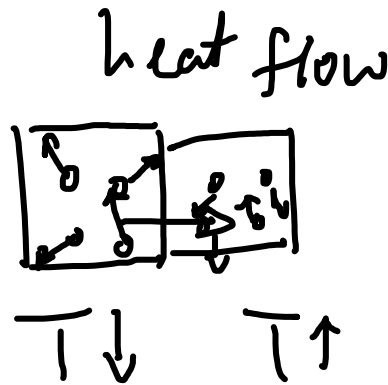
# Conduction

Dr K M Hock



At contact, faster molecules collide with slower.

faster molecules lose KE

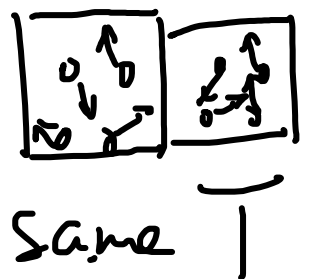


slower molecules KE  $\uparrow$  gain thermal energy

Molecules in both body - same average KE

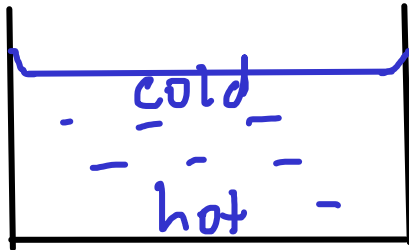
heat transfer stops

flow stops



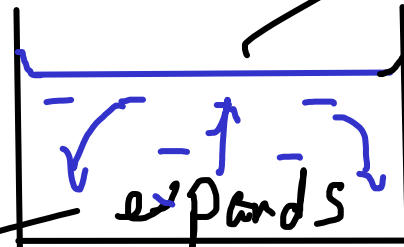
# Convection

Dr K M Hock



When liquid (or gas) is heated at bottom

↑  
fire  
hot liquid (gas) less dense

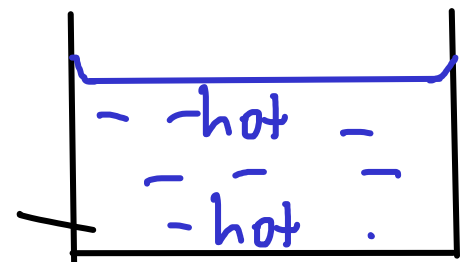


floats to top  
cold liquid more dense sinks

↑  
fire

Cold liquid gets hot and rises

Convection current



↑  
fire

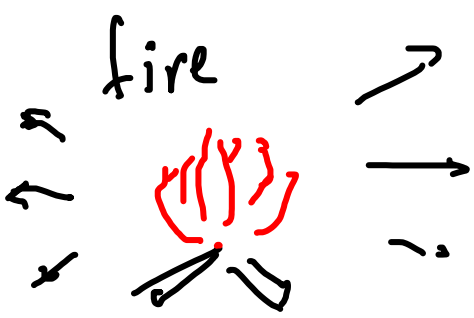
Keeps flowing until all liquid hot.

explain that energy transfer of a body by radiation does not require a material medium and the rate of energy transfer is affected by: (i) colour and texture of the surface (ii) surface temperature (iii) surface area

# Radiation

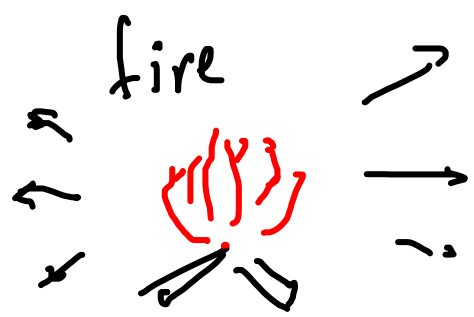
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- infra red radiation
- speed of light
- no medium needed
- can go thru' vacuum



black, rough

absorbs heat faster



also radiates heat

higher  $T$   
↳ net heat gain



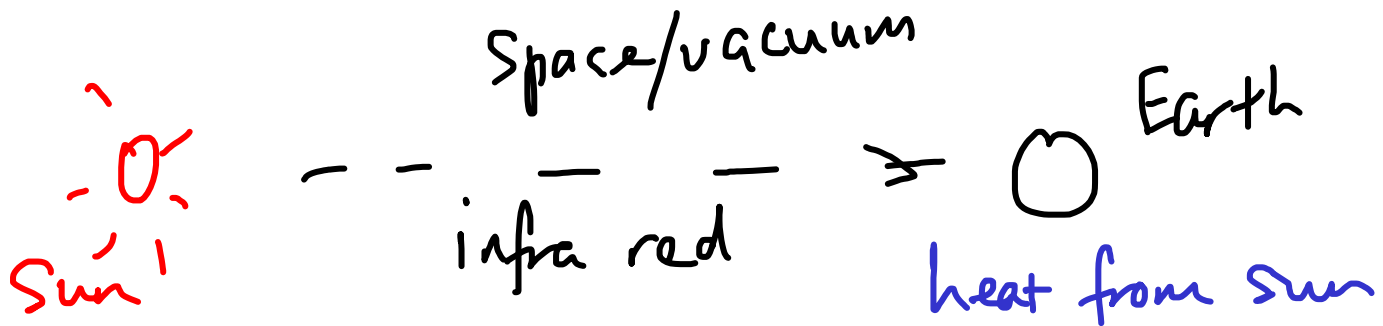
smaller area

absorbs heat slower

# Everyday Thermal Transfer

Dr K M Hock

## Radiation



## Convection



## Conduction

