WEEK 5

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- A summary of the topics about radiative heat transfer we went through including the definitions of emissivity, absorptivity and reflectivity, the view factor, the heat exchange betweeen two black surfaces,the heat exchange between the two gray surface and finally the definition of radiative resistances

- Radiation, It is the transfer of heat by of electromagnetic waves (photons).

- Due to the temperature of the objects the type of radiation they emit is related to thermal radiation.
- In fact, radiation heat transfer is the fastest (at the speed of light) and does no decelerate in space. This is the way solar energy reaches the earth.

- Emissivity, The transmission feature, whose value varies between $0 \leq e \leq 1$, is a measure of how close a surface is to a black body with a spreading e = 1.

-Absorptivity, It is the absorption rate of radiation energy to the surface. It is in the range of $0 \leq a \leq 1$.

-Reflectivity is defined as the thermal radiation reflected by a surface. Whose value varies between $0 \leq p \leq 1$

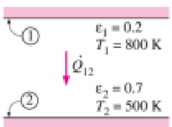
- View factor is dimensionless factor that determines how much of a surface is visible to another surface and is a pure geometric property.

-The heat exchange between two black surfaces
In the case of two black bodies, the radiation leaving the surface is only emitted, not reflected. Therefore, the heat exchange arises from the emission of radiation of the two surfaces.

-The heat exchange between two gray surfaces
For gray surfaces, radiation leaving the surfaces is both, reflected as well as emitted. This total radiation leaving the gray surface is defined as radiosity

- Radiative heat transfer between a surface and the surroundings, radiative resistance of the surface is defined as: $R_i=1-\varepsilon_i/A_i\varepsilon_i$

- Solve the last example you solved in the class (radiative heat exchange between two parallel plates) awhile considering the two emissivities to be 0.1, what can you conclude from the result?



$Q_{1\to 2}= \sigma A(T_1^4-T_2^4)/1/\varepsilon_1+1/\varepsilon_2-1=937.17$ W/m2

Previously, for emissivity values 0.2 and 0.7, $Q_{1\to 2}$ was 3625.369 W/m2.

Thus, it can be concluded that, lower the emissivity of the two parallel plates, lower is the net radiative heat exchange between them.