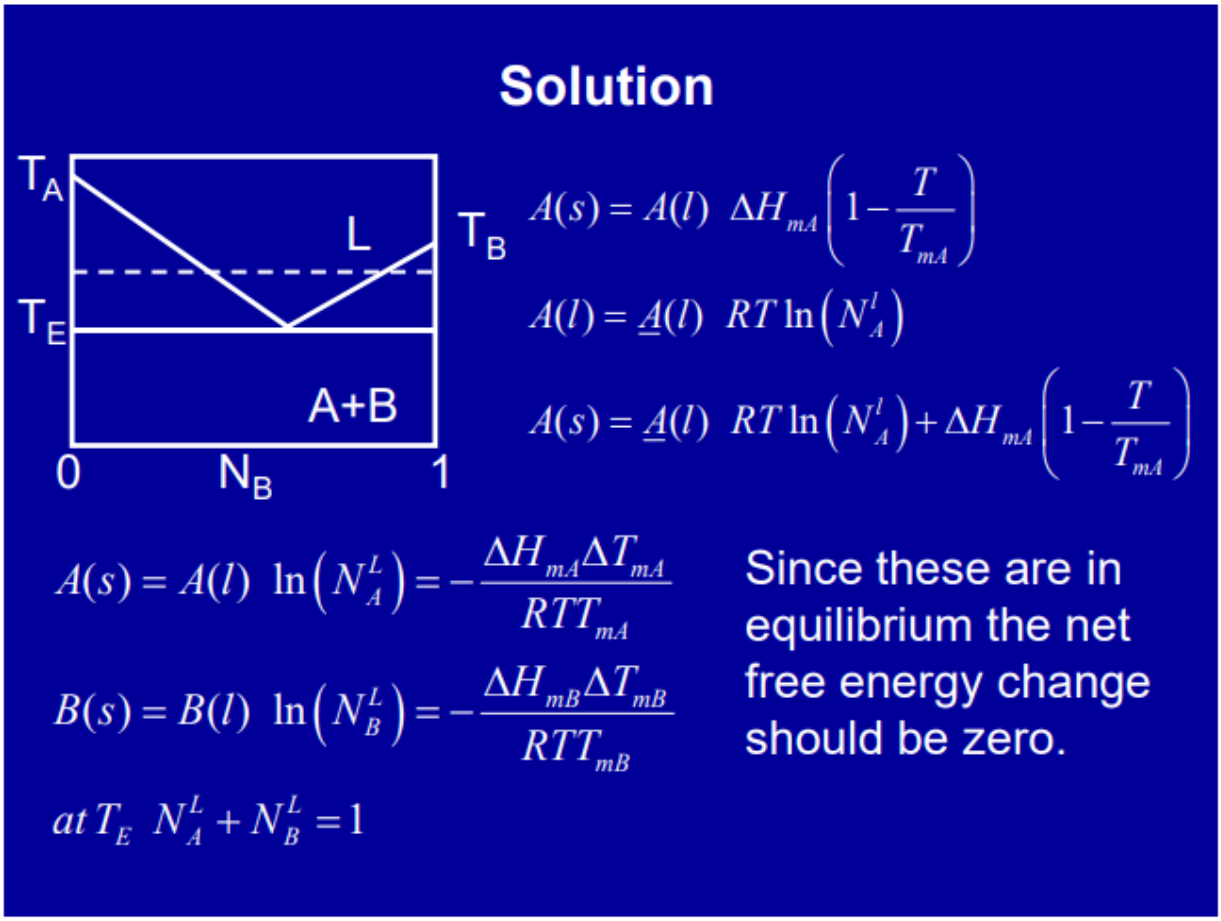
Experiment-7

Title: *Write a program to calculate & plot the liquidus of the binary eutectic phase diagram*

Theory:



Given:

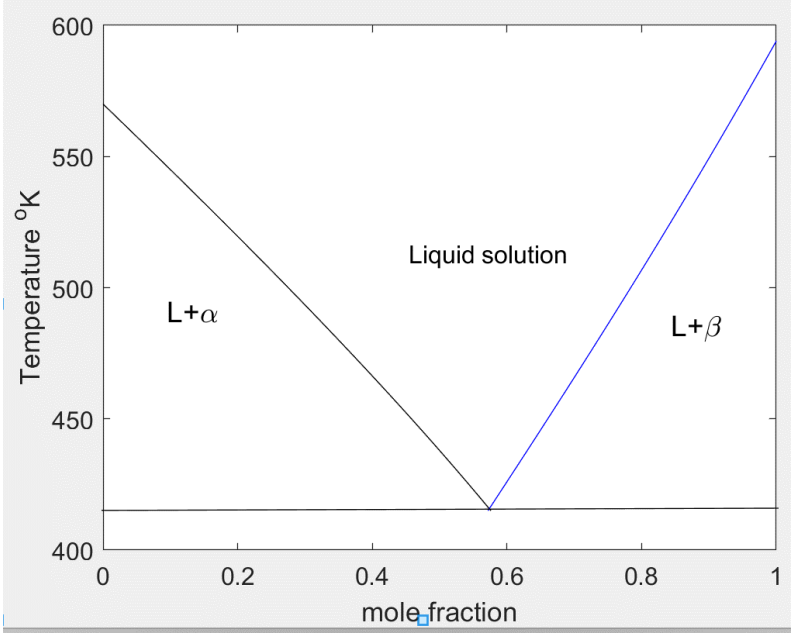
Binary eutectic is Bi-Cd.
The melting points & latent heats of fusion of Bi are 271C & 10.89 kJ/mole and those of Cd are 321C & 6.4 kJ/mole.
Use step size of 0.5K (or any other appropriate step size)

Program

```
Tma=297+273;%degK
Tmb=321+273;%degK
```

```
T=570:-5:415;
delhma=10890;% Heat of melting A
delhmb=6400; %J/mole Heat of melting B
delTma=Tma-T;
R=8.314;
lnNal=-(delhma*delTma)./(R*T*Tma);
Nal=exp(lnNal);
plot(1-Nal,T,'k-')
hold on
T=595:-5:415;
delTmb=Tmb-T;
lnNbl=-(delhmb*delTmb)./(R*T*Tmb);
Nbl=exp(lnNbl);
plot(Nbl,T,'b-')
axis([0 1 300 700])
```

Output



Conclusion: The liquidus of the Bi-Cd binary eutectic is plotted successfully.