Thrmdynmc S:

S change of srndngs:

Boltzman S:

Carnot Effn:

Thrmdynmc T:

Clausius Inequality:

S of isotherm exp:

S of trans:

Varitn of S with T:

Std reaction S:

Spont. if: (a) (b)

(a) (b)

Helmholtz E:

Gibb’s E:

(a) (b)

Eqlbm:

Max work:

Eqlbm:

Max non-expn W:

Std Gibbs E of rxn:

Ions in soln:

Born eqn:

Fundm eqn:

“ of chem therm:

Varitn of G:

Gibbs-Helmholtz eqn:

P dep. Of G: and

Fugacity:

Fugacity coeff:

Chem pot.:

Phase rule:

Varitn of with :

Varitn of with :

Vapur P in prsnc of ext P: ,

Clapeyron eqn:

Clausi-Clapey eqn:

Molar volume:

Maxwell’s relations: if , then

And

So f.e.: and

Therefore: