## (5) Characteristics of the Neon Gain Curve

All intrinsic HeNe stabilization techniques are based on controlling the mode position using the NGC itself as the optical frequency reference. Thus, depending on what precision is required, its absolute optical frequency, width, and profile must be known. These are affected primarily by the temperature, pressure, and He:Ne isotope ratio in the tube. However, due to mode competition, the length of the tube may have a significant effect on the shape of the NGC, especially for the shorter tubes of interest here.

Note that while the NGC is discussed, it is actually the "Laser Output Power Curve" or LOPC that provides the input variables for most of these techniques. However, we may use the two interchangeably in discussions, even though purists will probably object. :)

