

ABSTRACT

The goal of this work has been the construction of a single phase solid material of fixed composition and size through a thermal process of constant pressure and temperature.

The methodology followed was based on a random composition which was determined through the interaction of the constituents. This interaction was dynamically followed while the components were in the gaseous state until the equilibrium composition was achieved.

The approach can describe any interaction between any components at a predetermined temperature. This allows us to identify the minimum or maximum temperature at which the interaction can be activated without compromising the destabilization of the resulting material. The pressure was considered fixed, but it can be preselected and can vary if necessary.

While the methodology followed is Generic and is based on fundamental Thermodynamic Equilibrium criteria, it is at the same time, unique due to the physical interpretation given to the correlations that arise between the quantities involved.

An integral part of the process was the homogenized condition of the finished product, which is achieved due to the nature of the procedure followed. The spontaneity not only minimizes the duration of the procedure, but it also ensures the homogenized construction of the finished product.

Keywords: : Spontaneous Process, Chemical Reaction , Mixture, Equilibrium Constant (k_p), Configuration entropy, Chlorine (Cl)