ABSTRACT

In the thesis with title "similarities between the diffusion transport and the propagation of information in networks" we describe the complete mechanism of diffusion in materials and the similarities this physical process has with the propagation of information in networks. At the first section of the thesis we describe completely the diffusion process that takes place in materials giving all the details for the structure of crystal lattice. In the second section we describe the double diffusivity model and in the next section we give details for the experimental validation of the aforementioned model. In the fourth section we describe the theory of spinodal decomposition and we give the model that describes the phase transition between liquid and gas interfaces (special case of diffusion). In the next section we present a model that use this theory to describe network behavior and in the fifth section we present model from bibliography that describe diffusion in networks like social , financial and computer networks,. In the last section of the thesis we present a new model that describes diffusion in networks, a unique attempt to describe diffusion in networks under the concept of the double diffusion.