

ABSTRACT

In this final project will discuss the simulated destruction of cancer cells that occurs in the lungs using cryosurgery process. Extermination carried out by flowing liquid nitrogen and then will spread very cold temperatures. The temperature distribution is done by using the numerical Godunov scheme development and methods of volume up. Temperature equation used to apply phase change involving moving boundaries. Validated numerical equations with exact solution, so as to provide accurate results and a decent used in two-dimensional systems. On this analysis will be more detail on the development of the numerical simulation of one-dimensional and two-dimensional simulations of heat transfer. The simulation result is an image that informing the temperature profile and the position of the interface, so it can be seen clearly how the process of cryosurgery may occur. With this simulation is expected to determine the optimal time of cryosurgery process itself, so that it can determine the time required so that maximize the cancerous tissue while minimizing healthy tissue surrounding the result of cryosurgery process. So as to see the results of the simulation, the doctor can minimize the risk posed to the real.

Keywords: cryosurgery, bioheat transfer, Godunov method, finite volume method.