

## The study of ice formation in freezing processes occuring in plane geometries

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Food freezing processes are largely studied because of their importance in achieving food safety. In plate freezers, the cold surfaces in contact with the product are stainless steel or aluminum hollow plates through which circulates the refrigerant. The rate of the freezing process is critical to the product's quality and to the productivity of the process and therefore the freezing dynamics is of extreme importance. Another application may be the production of ice blocks required for products refrigeration in places where no refrigeration facilities are available. The aim of the paper is to study theoretically the process of ice buildup in the space between the parallel plates of a plate freezer. This study is performed using implicit finite difference schemes. The method involves the use of variable step networks attached to the liquid and solid domains. The evolutions of the freezing rate and of the solid layer thickness are determined for different geometry ratios and cooling temperatures.