

## عنوان مقاله:

Cryogenic Processor for Freezing of Biological Materials

## محل انتشار:

همایش ملی مهندسی مکانیک (سال: 1391)

تعداد صفحات اصل مقاله: 4

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## خلاصه مقاله:

Freezing with liquid nitrogen has been used for long term storage of biological materials such as bonemarrow, stem cells, etc. At liquid nitrogen temperature, the rates of biochemical activities are almost negligible, and most cells can stay in a state of suspended animation for a very long time. However, cells get damaged at the time of freezing and thawing. Thus, the freezing process must follow a strict temperature vs. time protocol, which can only be provided in a cryogenic processor (bio-freezer). Design of a programmable bio-freezer for controlled freezing of biological materials has been presented. Details, including cooling mechanism and temperature control module have been described, and design tradeoffs have been discussed. The design can be used by other researchers to construct reliable bio-freezers.

## کلمات کلیدی:

cryogenic, cryopreservation, temperature control

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/203465>

