عنوان مقاله:

Numerical Modeling of the Shear Module of Alginate Micro-Beads under the Ultrasonic Thermal Effect

محل انتشار:

تعداد صفحات اصل مقاله: 7

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خلاصه مقاله:

The mechanical properties of microscopic particles have been a heated research object for it takes the deformation of micro-beads in the microfluidic environment into account. Sufficient knowledge on mechanical properties of micro-beads would lead to better device design and application for cell mechanics, tissue engineering, etc. The physical properties of alginate beads were examined both in normal condition and under compression, to illustrate its mechanical stability and to calculate the shear modulus through Hertz model. Furthermore, the modeling of physicochemical variation of micro-beads under the ultrasonic thermal effect was performed. The temperature rose simultaneously with ultrasonic thermal effect. The shear module and diameter of micro-beads changed with the increase of temperature in the solution. The descriptive model and the predictive model for the relationship between temperature and the module/diameter of micro-beads were established, and the validation process presented the effectiveness of the models.

کلمات کلیدی:

Thermal effect, Modeling, alginate, Shear module

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/1282731