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Structural changes of Ca-alginate beads caused by immobilized yeast cell growth

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Highlights

► Structural changes of yeast cell loaded Ca-alginate beads are considered.

They are induced chemically, mechanically and electro-statically.

Structural changes are considered within three time regimes.

Abstract

Structural changes of Ca-alginate bead due to yeast cell loading and the impact on their mechanical properties were studied based on experimental data of cell number density per beads, cell rearrangement within the bead surface and core regions, bead average volume and density, bead storage and loss moduli. Structural changes could be explained by (1) mechanical and electrostatic cell-matrix interactions and (2) chemical interactions of the matrix with the components of the nutrition medium which include: wash out of Ca²⁺ ions by presence of non-gelling ions and by chelating compounds such as phosphate.

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