

The effectiveness of using micro-gel bead-immobilized cells for aerobic processes was investigated. Glutamine production by *Corynebacterium glutamicum*, 9703-T, cells was used as an example. The cells were immobilized in Sr-alginate micro-gel beads 500  $\mu$ m in diameter and used for fermentation processes in a stirred tank reactor with a modified impeller at 400 min<sup>-1</sup>. Continuous production of glutamine was carried out for more than 220 h in this reactor and no gel breakage was observed. As a result of the high oxygen transfer capacity of this system, the glutamine yield from glucose was more than three times higher, while the organic acid accumulation was more than 24 times lower than those obtained with 3.0 mm-gel bead-immobilized cells in an airlift fermentor under similar experimental conditions. During the continuous fermentations there was evolution and proliferation of non-glutamine producing strains which led to a gradual decrease in the productivity of the systems. Although a modified production medium which suppresses cell growth during the production phase was effective in maintaining the productivity, the stability of the whole system was shortened due to high cell deactivation rate in such a medium.

*Production of glutamine by micro-gel bead-immobilized....* Available from:

[https://www.researchgate.net/publication/227117002\\_Production\\_of\\_glutamine\\_by\\_micro-gel\\_bead-immobilized\\_Corynebacterium\\_glutamicum\\_9703-T\\_cells\\_in\\_a\\_stirred\\_tank\\_reactor](https://www.researchgate.net/publication/227117002_Production_of_glutamine_by_micro-gel_bead-immobilized_Corynebacterium_glutamicum_9703-T_cells_in_a_stirred_tank_reactor)