

List of publications

1. Mondal, K., Ramesh, N. G., **Roy, I.** and Gupta, M. N. (2005) Enhancing the synthetic utility of aldolase antibody 38C2. *Bioorg. Med. Chem. Lett.* (In press)
2. **Roy, I.** and Gupta, M. N. (2005) Immobilization of enzymes on smart polymers. In: Immobilization of enzymes and cells (ed. Guisan, J. M.) Humana Press, Totowa, USA (In press)
3. **Roy, I.** and Gupta, M. N. (2005) Bioaffinity immobilization. In: Immobilization of enzymes and cells (ed. Guisan, J. M.) Humana Press, Totowa, USA (In press)
4. **Roy, I.** and Gupta, M. N. (2005) Use of immobilized biocatalysts in fluidized bed format. In: Immobilization of enzymes and cells (ed. Guisan, J. M.) Humana Press, Totowa, USA (In press)
5. **Roy, I.**, Mondal, K., Sharma, A. and Gupta, M. N. (2005) Simultaneous refolding/purification of xylanase with a microwave treated smart polymer. *Biochim. Biophys. Acta* 1747, 179-187.
6. **Roy, I.**, Sardar, M. and Gupta, M. N. (2005) Crosslinked alginate-guar gum beads as fluidized bed affinity media for purification of jacalin. *Biochem. Eng. J.* 23, 193-198.
7. Singh, N., Jabeen, T., Sharma, S., **Roy, I.**, Gupta, M. N., Bilgrami, S., Baxla, A. P., Dey, S., Perbandt, M., Betzel, C. and Singh, T. P. (2005) Detection of native peptides as potent inhibitors of enzymes: Crystal structure of the complex formed between the treated bovine α -chymotrypsin and an autocatalytically produced octapeptide: Ala-Val-Pre-Gly-Ser-Trp-Pro-Trp at 2.2 Å resolution. *FEBS J.* 272, 562-572.
8. Gupta, A., **Roy, I.**, Patel, R. K., Singh, S. P., Khare, S. K., Gupta, M. N. (2005) One-step purification and characterization of an alkaline protease from haloalkaliphilic *Bacillus* sp. *J. Chromatogr. A* 1075, 103-108.
9. **Roy, I.**, Sharma, A. and Gupta, M. N. (2005) Recovery of biological activity in reversibly inactivated proteins by three phase partitioning. *Enzyme Microb. Technol.* 37, 113-120.
10. Gupta, A., **Roy, I.**, Khare, S. K., Gupta, M. N. (2005) Purification and characterization of a solvent stable protease from *Pseudomonas aeruginosa* PseA. *J. Chromatogr. A* 1069, 155-161.
11. **Roy, I.** and Gupta, M. N. (2005) Enhancing reaction rate for transesterification reaction catalyzed by *Chromobacterium* lipase. *Enzyme Microb. Technol.* 36, 896-899.

12. Gupta, M. N. and **Roy, I.** (2004) Enzymes in organic media: Forms, functions and applications. *Eur. J. Biochem.* 271, 2575-2583.
13. **Roy, I.**, Sharma, A. and Gupta, M. N. (2004) Obtaining higher transesterification rates with subtilisin Carlsberg in nonaqueous media. *Bioorg. Med. Chem. Lett.* 14, 887-889.
14. **Roy, I.** and Gupta, M. N. (2004) Preparation of highly active α -chymotrypsin for catalysis in organic media. *Bioorg. Med. Chem. Lett.* 14, 2191-2193.
15. **Roy, I.**, Sharma, A. and Gupta, M. N. (2004) Three phase partitioning for simultaneous renaturation and partial purification of *Aspergillus niger* xylanase. *Biochim. Biophys. Acta* 1698, 107-110.
16. **Roy, I.** and Gupta, M. N. (2004) Hydrolysis of starch by a mixture of glucoamylase and pullulanase entrapped individually in calcium alginate beads *Enzyme Microb. Technol.* 34, 26-32.
17. Sharma, A., **Roy, I.** and Gupta, M. N. (2004) Affinity precipitation and macroligand facilitated three phase partitioning for refolding of urea-denatured pectinase. *Biotechnol. Prog.* 20, 1255-1258.
18. **Roy, I.** and Gupta, M. N. (2004) Freeze-drying of proteins: Some emerging concerns. *Biotechnol. Appl. Biochem.* 39, 165-177.
19. **Roy, I.**, Jain, S., Teotia, S. and Gupta, M. N. (2004) Evaluation of microbeads of calcium-alginate as a fluidised bed medium for affinity chromatography of *Aspergillus niger* pectinase. *Biotechnol. Prog.* 20, 1490-1495.
20. **Roy, I.** and Gupta, M. N. (2004) Three phase partitioned α -chymotrypsin shows higher activity in water as well as organic solvents *Biocatal. Biotransf.* 22, 261-268.
21. Jain, S., **Roy, I.** and Gupta, M. N. (2004) A smart bioconjugate of trypsin with alginate *Artificial Cells Blood Subst. Biotechnol.* 32, 343-355.
22. **Roy, I.**, Sharma, S. and Gupta, M. N. (2003) Smart biocatalysts: Design and application. *Adv. Biochem. Eng. Biotechnol.* 86, 159-189.
23. **Roy, I.**, Gupta, A., Khare, S. K., Bisaria, V. S. Gupta, M. N. (2003) Immobilization of xylan-degrading enzymes from *Melanocarpus albomyces* IIS 68 on the smart polymer Eudragit L-100 *Appl. Microb. Biotechnol.* 61, 309-313.

24. **Roy, I.** and Gupta, M.N. (2003) Selectivity in affinity chromatography. In: Isolation and purification of proteins (eds. Mattiasson, B. and Kaul-Hatti, R.) Marcel Dekker Inc., New York, pp. 57-94.
25. **Roy, I.**, Rao, M.V.S. and Gupta, M. N. (2003) An integrated process for the purification of lysozyme, ovalbumin and ovomucoid from hen egg white *Appl. Biochem. Biotechnol.* 111, 56-64.
26. Sardar, M., **Roy, I.** and Gupta, M. N. (2003) A smart bioconjugate of alginate and pectinase with unusual biological activity towards chitosan. *Biotechnol. Prog.* 19, 1654-1658.
27. **Roy, I.** and Gupta, M. N. (2003) Lactose hydrolysis by LactozymTM immobilized on cellulose beads in batch and fluidized bed modes *Process Biochem.* 39, 325-332.
28. **Roy, I.**, Sardar, M. and Gupta, M. N. (2003) Hydrolysis of chitin by PectinexTM *Enzyme Microb. Technol.* 32, 582-588.
29. **Roy, I.**, Sardar, M. and Gupta, M. N. (2003) Evaluation of a smart bioconjugate of pectinase for chitin hydrolysis. *Biochem. Eng. J.* 16, 329-335.
30. **Roy, I.** and Gupta, M. N. (2003) κ -Carrageenan as a new smart macroaffinity ligand for purification of pullulanase. *J. Chromatogr. A* 998, 103-108.
31. **Roy, I.** and Gupta, M. N. (2003) Use of pectinase immobilized on κ -carrageenan for hydrolysis of polygalacturonic acid, chitosan and chitin *Biocatal. Biotrans.* 21, 297-304.
32. **Roy, I.** and Gupta, M. N. (2003) Non-thermal effects of microwave on protease-catalyzed esterification and transesterification. *Tetrahedron* 59, 5431-5436.
33. Safarikova, M., **Roy, I.**, Gupta, M. N. and Safarik, I. (2003) Magnetic alginate microparticles for purification of α -amylases. *J. Biotechnol.* 105, 255-260.
34. **Roy, I.**, Mondal, K. and Gupta, M. N. (2003) Accelerating enzymatic hydrolysis of chitin by microwave pre-treatment *Biotechnol. Prog.* 19, 1648-1653.
35. **Roy, I.** and Gupta, M. N. (2003) Smart materials: emerging biochemical applications. *Chem. Biol.* 10, 1161-1171.
36. Mondal, K., **Roy, I.** and Gupta, M. N. (2003) Enhancement of catalytic efficiencies of xylanase, pectinase and cellulase by microwave pretreatment of their substrates *Biocatal. Biotrans.* 22, 9-16.

37. Mondal, K., **Roy, I.** and Gupta, M. N. (2003) κ -Carrageenan as a Carrier in affinity precipitation of yeast alcohol dehydrogenase *Protein Expr. Purif.* 32, 151-160.
38. **Roy, I.** and Gupta, M. N. (2003) Applications of microwaves in biological sciences. *Curr. Sci.* 85, 1685-1693.
39. **Roy, I.** and Gupta, M. N. (2003) pH responsive polymer-assisted refolding of urea-denatured α -chymotrypsin. *Protein Eng.* 16, 1153-1157.
40. **Roy, I.**, Rao, M.V.S. and Gupta, M. N. (2003) Purification of lysozyme from other hen egg white proteins using metal affinity precipitation. *Biotechnol. Appl. Biochem.* 37, 9-14.
41. **Roy, I.** and Gupta, M. N. (2002) Three phase affinity partitioning of proteins. *Anal. Biochem.* 300, 11-14.
42. Gupta, M. N. and **Roy, I.** (2002) Affinity-based separation: An overview. In: Methods for affinity-based separation of proteins/enzymes (ed. Gupta, M. N.) Birkhauser Verlag, Basel, pp. 1-15.
43. **Roy, I.** and Gupta, M. N. (2002) Macroaffinity ligands in bioseparation In: Methods for affinity-based separation of proteins/enzymes (ed. Gupta, M. N.) Birkhauser Verlag, Basel, pp. 130-147.
44. **Roy, I.** and Gupta, M. N. (2002) Unexpected affinity of polysaccharides and its application in separation of enzymes on fluidized beds. *Sep. Sci. Technol.* 37, 1591-1610.
45. **Roy, I.**, Sharma, S. and Gupta, M. N. (2002) Separation of an isoenzyme of polyphenol oxidase from *Duranta plumieri* by expanded bed chromatography. *Protein Expr. Purif.* 24, 181-187.
46. Gupta, M. N., Jain, S. and **Roy, I.** (2002) Immobilized metal affinity chromatography without chelating ligands - Purification of soybean trypsin inhibitor on zinc alginate beads *Biotechnol. Prog.* 18, 78-81.
47. **Roy, I.** and Gupta, M. N. (2002) Purification of a bacterial pullulanase on a fluidized bed of calcium alginate beads *J. Chromatogr. A* 950, 131-137.
48. **Roy, I.** and Gupta, M. N. (2002) Applied Biocatalysis: An Overview. *Ind. J. Biochem. Biophys.* 39, 220-228.
49. **Roy, I.** and Gupta, M. N. (2002) Downstream processing of enzymes/proteins. *Proc. Ind. Natl. Sci. Acad. (B)* B68, 175-204.

50. Gupta, A., **Roy, I.**, Khare, S. K., Bisaria, V. S. Gupta, M. N. (2002) One-step purification of xylanase from *Melanocarpus albomyces* and ethylene glycol as a novel soluble additive for enhancing its thermal stability *Biotechnol. Lett.* 24, 2005-2009.
51. Singh, R. K., Gourinath, S., Sharma, S., **Roy, I.**, Gupta, M. N., Betzel, C., Srinivasan, A. and Singh, T.P. (2001) Enhancement of enzyme activity through three phase partitioning: Crystal structure of a modified serine protease at 1.5 Å resolution. *Protein Eng.* 14, 307-313.
52. Sharma, S., **Roy, I.** and Gupta, M. N. (2001) Separation of phospholipase D from peanut on a fluidized bed of crosslinked alginate beads. *Biochem. Eng. J.* 8, 235-239.
53. **Roy, I.** and Gupta, M. N. (2000) Current trends in affinity-based separation of proteins/enzymes. *Curr. Sci.* 78, 587-591.
54. **Roy, I.**, Sardar, M. and Gupta, M. N. (2000) Exploiting unusual affinity of usual polysaccharides for bioseparation of enzymes on fluidized beds *Enzyme Microb. Technol.* 27, 53-65.
55. **Roy, I.** and Gupta, M. N. (2000) Purification of alkaline phosphatase from chicken intestine by expanded bed affinity chromatography on dye-linked cellulose. *Biotechnol. Appl. Biochem.* 32, 81-87.
56. Sardar, M., **Roy, I.** and Gupta, M. N. (2000) Simultaneous purification and immobilization of *Aspergillus niger* xylanase on the reversibly soluble polymer Eudragit L-100. *Enzyme Microb. Technol.* 27, 672-679.
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58. **Roy, I.** and Gupta, M. N. (2000) Purification of a 'double-headed' inhibitor of alpha-amylase / Proteinase K from wheat germ by expanded bed chromatography. *Bioseparation* 9, 239-245.
59. **Roy, I.**, Pai, A., Lali, A. and Gupta, M.N. (1999) Comparison of batch, packed bed and expanded bed purification of *A. niger* cellulase using cellulose beads *Bioseparation* 8, 317-326.
60. Tyagi, R., **Roy, I.**, Agarwal, R. and Gupta, M.N. (1998) Carbodiimide coupling of enzymes to the reversibly soluble-insoluble polymer Eudragit S-100. *Biotechnol. Appl. Biochem.* 28, 201-206.

Participation in conferences/symposia

1. Alkaline protease from a solvent tolerant *Pseudomonas aeruginosa* isolate
A. Gupta, **I. Roy**, S. K. Khare and M. N. Gupta
In: 73rd Annual Meeting of Society of Biological Chemists (India),
G. B. Pant University, Pantnagar, 21st-24th Nov., 2004.
2. Three phase partitioning: A novel approach for refolding and simultaneous purification
A. Sharma, **I. Roy** and M. N. Gupta
In: 73rd Annual Meeting of Society of Biological Chemists (India),
B. Pant University, Pantnagar, 21st-24th Nov., 2004.
3. pH-responsive, polymer- assisted refolding of urea-denatured α -chymotrypsin and xylanase
K. Mondal, **I. Roy** and M. N. Gupta
In: 73rd Annual Meeting of Society of Biological Chemists (India),
G. B. Pant University, Pantnagar, 21st-24th Nov., 2004.
4. Polymers irradiated with microwaves in bioseparation, bioconversion and protein refolding
K. Mondal, **I. Roy**, A. Sharma, P. Mehta and M. N. Gupta
In: International symposium on microwave science and its application to related fields,
Takamatsu, Japan, July 27-30, 2004.
5. Structural basis of enhanced catalytic activity of a serine protease as a result of its treatment by heating in organic solvents and three phase partitioning.
S. Sharma, R. K. Singh, **I. Roy**, M.N.Gupta and T.P.Singh
In: National Symposium on Stability and Stabilization of Biomolecules, Aligarh Muslim University, March 13-14, 2001.
6. Some emerging bioseparation techniques in industrial enzymology.
S. Sharma, A. Sharma, **I. Roy** and M. N. Gupta
In: Conference on "Biotechnology - The science and the business", Indian Institute of Technology, Delhi, Sept. 28-30, 2001
7. Purification strategies for enzymes from thermophiles.
I. Roy, S. Sharma, A. Sharma, S. Teotia and M. N. Gupta
In: International Conference on Biology and Biotechnology of Thermophilic Microbes, University of Delhi South Campus, New Delhi, Dec. 3-7, 2001.

8. Enhancement of enzyme activity through three-phase partitioning: Crystal structure of a modified serine proteinase at 1.5 Å resolution.
S. Gourinath, S. Sharma, R.K.Singh, T.P.Singh, **I. Roy** and M.N.Gupta
In: National seminar on Recent trends in crystallography, biophysics and computational biology. Department of Crystallography and Biophysics, University of Madras, Chennai, April 24-26, 2000.
9. Exploiting unusual affinity of polysaccharides in fluidized bed mode for purification of enzymes.
I. Roy and M. N. Gupta
In: Symposium on preparative and industrial chromatography and allied techniques (SPICA 2000). ETH, Zurich, Switzerland, Oct. 9-11, 2000.
10. Expanded bed chromatography – an emerging tool in bioseparation
I. Roy and M.N.Gupta
In: 1st National students' symposium on biochemical engineering and biotechnology, Department of Biochemical Engineering and Biotechnology, IIT Delhi, 6th-7th March, 1999.