

## Publications

### Recent

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### Books

1. R. Ghosh, Protein Bioseparation Using Ultrafiltration: Theory, Applications and New Developments, Imperial College Press/World Scientific Publishing Pte Ltd. ISBN 1-86094-317-9 (June 2003).
2. R. Ghosh, Principles of Bioseparation Engineering, World Scientific Publishing Pte Ltd. ISBN 981-256-892-1 (October 2006).

### Refereed Journal Papers

#### \* Corresponding author

1. R. Ghosh\*, G. Chen, Mathematical modelling and evaluation of performance of cuboid packed-bed devices for chromatographic separations, *Journal of Chromatography A*, 1515 (2017) 138-145.
2. P. Madadkar, U. Umatheva, G. Hale, Y. Durocher, R. Ghosh\*, Ultrafast separation and analysis of monoclonal antibody aggregates using membrane chromatography, *Analytical Chemistry*, 89 (2017) 4716-4720.
3. Y. Shahid, R. Ghosh\*, Dewatering of microalgae suspension using air-sparged ultrafiltration, *Separation Science and Technology*, 52 (2017) 344-351.
4. P. Madadkar, R. Sadavarte, M. Butler, Y. Durocher, R. Ghosh\*, Preparative separation of monoclonal antibody aggregates by cation exchange laterally-fed membrane chromatography. *Journal of Chromatography B*, 1055-1056 (2017) 158-164.
5. Z. Xu, R. Peng, X. Chen, R. Ghosh, H.P.V. Rupasinghe\*, Isolation of flavonoids from apple peel using graphene oxide cotton fiber, *Natural Product Research*, 2017 (2017) 1-5.
6. A.S. Kazemi, L. Boivin, S.M. Yoo, R. Ghosh, D.R. Latulippe\*, Elucidation of filtration performance of hollow-fibre membranes via a high-throughput screening platform, *Journal of Membrane Science*, 535 (2017) 241-249.
7. R. Sadavarte, C.D.M. Filipe, R. Ghosh\*, Recovery of functionally-active protein from inclusion bodies using a thermal-cycling method, *Biotechnology Progress*, 33 (2017) 133-139.
8. R. Peng, X. Chen\*, R. Ghosh\*, Preparation of graphene oxide-cotton fiber composite adsorbent and its application for the purification of polyphenols from pomegranate peel extract, *Separation and Purification Technology*, 174 (2017) 561-569.
9. R. Peng, Q. Wu, X. Chen\*, R. Ghosh\*, Purification of danshensu from *Salvia miltiorrhiza* extract using graphene oxide based composite adsorbent, *Industrial and Engineering Chemistry Research* (2017) accepted.
10. Y. Qin, A.U. Alam, S. Pan, M.M.R. Howlader, R. Ghosh, N.X. Hu, H. Jin, S. Dong, C.H. Chen, M.J. Deen\*, Integrated water quality monitoring system with pH, free chlorine, and temperature sensors, *Sensors and Actuators B: Chemical*, (2017) accepted.
11. X. Shang, B. Corbett, B. Macdonald, P. Mhaskar\*, R. Ghosh\*, Modelling and optimization of protein PEGylation, *Industrial and Engineering Chemistry Research*, 55 (2016) 11785-11794.

12. R. Ghosh. (2016). Using a box instead of a column for process chromatography, *Journal of Chromatography A*, 1468 (2016) 164-172.
13. Y. Qin, A.U. Alam, S. Pan, M.M. Howlader, R. Ghosh, P.R. Selvaganapathy, M.J. Deen\*, Low temperature processing of palladium/palladium oxide films and their pH sensing performance, *Talanta*, 146 (2016) 517-524.
14. R. Ghosh\*, P. Madadkar, Q. Wu, On the workings of laterally-fed membrane chromatography, *Journal of Membrane Science*, 516 (2016) 26-32.
15. G. Chen, W. Song, B. Qi, R. Ghosh, Y. Wan\*, Separation of human serum albumin and polyethylene glycol by electro-ultrafiltration, *Biochemical Engineering Journal*, 109 (2016) 127-136.
16. Y. Qin, S. Pan, M.M. Howlader, R. Ghosh, N.X. Hu, M.J. Deen\*, Paper-based hand-drawn free chlorine sensor with poly(3,4-ethylenedioxythiophene): poly(styrenesulfonate), *Analytical Chemistry*, 88 (2016) 10384-10389.
17. P. Madadkar, S.L. Nino, R. Ghosh\*, High-resolution preparative purification of PEGylated protein using a laterally-fed membrane chromatography device, *Journal of Chromatography B*, 1035 (2016) 1-7.
18. P. Madadkar, R. Ghosh\*, High-resolution protein separation using a laterally-fed membrane chromatography device, *Journal of Membrane Science*, 499 (2016) 126-133.
19. P. Madadkar, Q. Wu, R. Ghosh\*, A laterally-fed membrane chromatography module, *Journal of Membrane Science*, 487 (2015) 173-179.
20. R. Ghosh\*, R. Sadavarte, A technique for drying and storing a protein as a soluble composite thin film on the surface of an ultrafiltration membrane, *Journal of Membrane Science*, 490 (2015) 256-265.
21. S. Pan, J.M.G.T. Torres, T Hoare, R. Ghosh\*, Transmission behavior of pNIPAM microgel particles through porous membranes, *Journal of Membrane Science*, 479 (2015) 141-147.
22. S. Pan, M.J. Deen, R. Ghosh\*, Low-cost graphite-based free chlorine sensor, *Analytical Chemistry*, 87 (2015) 10734-10737.
23. G. Chen, W. Song, B. Qi, J. Li, R. Ghosh, Y. Wan\*, Separation of protein mixtures by an integrated electro-ultrafiltration–electrodialysis process, *Separation and Purification Technology*, 147 (2015) 32-43.
24. R. Wang, Y. Zhou, Y. Huang, Q. Chen\*, R. Ghosh, Poly (N-isopropylacrylamide)-grafted dual stimuli-responsive filter paper for protein separation, *Chinese Journal of Polymer Science*, 33 (2015) 1048-1057.
25. R. Ghosh\*, An osmolyte-based micro-volume ultrafiltration technique, *Lab on a Chip*, 14 (2014) 4559-4566.
26. X. Shang, R. Ghosh\*, Membrane reactor for continuous and selective protein mono-PEGylation, *Journal of Membrane Science*, 451 (2014) 177-184.
27. R. Sadavarte, M. Spearman, N. Okun, M. Butler, R. Ghosh\*, Purification of chimeric heavy chain monoclonal antibody EG2- hFc using hydrophobic interaction membrane chromatography: An alternative to protein affinity chromatography, *Biotechnology and Bioengineering*, 111 (2014) 1139-1149.
28. Q. Wu, R. Wang, X. Chen, R. Ghosh\*, Temperature-responsive membrane for hydrophobic interaction based chromatographic separation of proteins in bind-and-elute mode, *Journal of Membrane Science*, 471 (2014) 56-64.

29. S.M. Yoo, R. Ghosh\*, Fabrication of alginate fibers using a microporous membrane based molding technique, *Biochemical Engineering Journal*, 91 (2014) 58.
30. R. Sadavarte, R. Ghosh\*, A thermal- cycling method for disaggregating monoclonal antibody oligomers, *Journal of Pharmaceutical Sciences*, 103 (2014) 870-878.
31. X. Shang, W. Wittbold, R. Ghosh\*, Purification and analysis of mono- PEGylated HSA by hydrophobic interaction membrane chromatography, *Journal of Separation Science*, 36 (2013) 3673-3681.
32. E. Mah, R. Ghosh\*, Thermo-responsive hydrogels for stimuli-responsive membranes, *Processes*, 1 (2013) 238-262.
33. R. Ghosh\*, S. Pan, L. Wang, S. Lu, A pulsed tangential- flow ultrafiltration technique for studying protein–drug binding, 102 (2013) 2679-2688.
34. M Mayani, CDM Filipe, MD McLean, JC Hall, R Ghosh\*, Purification of transgenic tobacco-derived recombinant human monoclonal antibody, *Biochemical Engineering Journal*, 72 (2013) 33–41.
35. S. Yoo, R. Ghosh\*, Simultaneous removal of leached protein-A and aggregates from monoclonal antibody using hydrophobic interaction membrane chromatography, *Journal of Membrane Science*, 390-391 (2012) 263-269.
36. X. Shang, D.Q. Yu, R. Ghosh\*, Integrated solid-phase synthesis and purification of PEGylated protein, *Biomacromolecules*, 12 (2011) 2772-2779.
37. D.Q. Yu, R. Ghosh\*, Enzymatic fragmentation of cation exchange membrane bound immunoglobulin G , *Biotechnology Progress*, 27 (2011) 61-66.
38. M. Mayani, M.D. McLean, J.C. Hall, R. Ghosh\*, Recovery and isolation of recombinant human monoclonal antibody from transgenic tobacco plant, *Biochemical Engineering Journal*, 54 (2011) 103-108.
39. D.Q. Yu, X. Shang, R. Ghosh\*, Fractionation of different PEGylated forms of a protein by chromatography using environment-responsive membranes, *Journal of Chromatography A*, 1217 (2010) 5595-5601.
40. D.Q. Yu, R. Ghosh\*, Membrane bioreactor separator system for integrated IgG fragmentation and Fab purification, *Journal of Immunological Methods*, 359 (2010) 37-41.
41. K.Z. Mah, R. Ghosh\*, Paper-based composite lyotropic salt-responsive membranes for chromatographic separation of proteins, 360 (2010) 149-154.
42. D.Q. Yu, R. Ghosh\*, Purification of PEGylated protein using membrane chromatography, *Journal of Pharmaceutical Sciences*, 99 (2010) 3326-3333.
43. L. Wang, T. Khan, K. Mohanty, R. Ghosh\*, Cascade ultrafiltration bioreactor-separator for continuous production and purification of F(ab')<sub>2</sub> , *Journal of Membrane Science*, 351 (2010) 96-103.
44. G. Hussack, B. Grohs, K. Almquist, M. McLean, R. Ghosh, J.C. Hall\*, Purification of plant-derived antibodies through direct immobilization of affinity ligands on cellulose, *Journal of Agricultural and Food Chemistry*, 58 (2010) 3451-3459.
45. L. Wang, R. Ghosh\*, Feasibility study for the fractionation of the major human immunoglobulin G subclasses using hydrophobic interaction membrane chromatography, *Analytical Chemistry*, 82 (2010) 452-455.
46. D.Q. Yu, R. Ghosh\*, Method for immunoglobulin G binding on hydrophobic surfaces, *Langmuir*, 26 (2010) 924-929.

47. M. Mayani, C.D.M. Filipe, R. Ghosh\*, Cascade ultrafiltration systems – integrated processes for the purification and concentration of lysozyme, *Journal of Membrane Science*, 374 (2010)150-158.
48. R. Ghosh\*, Permeation of model hydrophilic drug through biomimetic supported multi-liquid membrane, *Journal of Membrane Science*, 344 (2009) 107-111.
49. D.Q. Yu, R. Ghosh\*, Integrated fragmentation of IgG and purification of Fab using a reactant adsorptive membrane bioreactor separator system, *Biotechnology and Bioengineering*, 104 (2009) 152-161.
50. X. Sun, D.Q. Yu, R. Ghosh\*, Study of hydrophobic interaction based binding of immunoglobulin G on synthetic membranes, *Journal of Membrane Science*, 344 (2009) 165-171.
51. R. Huang, L.K. Kostanski, C.D.M. Filipe, R. Ghosh\*, Environment-responsive hydrogel-based ultrafiltration membranes for protein bioseparation, *Journal of Membrane Science*, 336 (2009) 42-49.
52. D.R. Latulippe, A.M. Mika, R.F. Childs, R. Ghosh, C.D.M. Filipe\*, Flux performance and macrosolute sieving behavior of environment responsive formed-in-place ultrafiltration membranes, *Journal of Membrane Science*, 342 (2009) 227-235.
53. R. Huang, K.Z. Mah, M. Malta, L.K. Kostanski, C.D.M. Filipe, R. Ghosh\*, Chromatographic separation of proteins using hydrophobic membrane shielded with an environment-responsive hydrogel, *Journal of Membrane Science*, 345 (2009) 177-182.
54. L. Wang, K.Z. Mah, R. Ghosh\*, Purification of human IgG using membrane based hybrid bioseparation technique and its variants: a comparative study, *Separation and Purification Technology*, 66 (2009) 242-247.
55. L. K. Kostanski\*, R. Huang, C.D.M. Filipe, R. Ghosh, Interpenetrating polymer networks as a route to tunable multiresponsive biomaterials – development of novel concepts, *Journal of Biomaterials Science-Polymer Edition*, 20 (2009) 271-297.
56. X. Chen\*, Z. Qi, Y. Huang, R. Pelton, R. Ghosh, Surfaces modified by amphiphilic copolymer: preparation and application, *Advanced Materials Research*, 47-50 (2009) 1311-1314.
57. M. Mayani, K. Mohanty, C.D.M. Filipe, R. Ghosh\*, Continuous fractionation of plasma proteins HSA and HlgG using cascade ultrafiltration systems, *Separation and Purification Technology*, 70 (2009) 231-241.
58. D.Q. Yu, M.D. McLean, J.C Hall, R. Ghosh\*, Purification of a human immunoglobulin G1 monoclonal antibody from transgenic tobacco using membrane chromatographic processes, *Journal of Chromatography A*, 1187 (2008) 128-137.
59. L. Wang, R. Ghosh\*, Fractionation of monoclonal antibody aggregates using membrane chromatography, *Journal of Membrane Science*, 318 (2008) 311-316.
60. D. Q. Yu, M.D. McLean, J.C. Hall, R. Ghosh\*, Purification of monoclonal antibody from tobacco extract using membrane-based bioseparation techniques, *Journal of Membrane Science* 323 (2008) 159-166.
61. D. M. Kanani, X. Sun, R. Ghosh\*, Reversible and irreversible membrane fouling during in-line microfiltration of concentrated protein solutions, *Journal of Membrane Science*, 315 (2008) 1-10.
62. X. Sun, D.M. Kanani, R. Ghosh\*, Characterization and theoretical analysis of protein fouling of cellulose acetate membrane during constant flux dead-end microfiltration, *Journal of Membrane Science*, 320 (2008) 372-380.

63. K. Mohanty, R. Ghosh\*, Novel tangential-flow countercurrent cascade ultrafiltration configuration for continuous purification of humanized monoclonal antibody, *Journal of Membrane Science*, 307 (2008) 117-125.
64. L. K. Kostanski\*, R. X. Huang, R. Ghosh, C.D.M. Filipe, Biocompatible poly(N-vinyl lactam)-based materials with environmentally-responsive permeability, *Journal of Biomaterials Science-Polymer Edition*, 19 (2008) 275-290.
65. D. Yu, X. Chen, R. Pelton, R. Ghosh\*, Paper-PEG-based membranes for hydrophobic interaction chromatography: Purification of monoclonal antibody, *Biotechnology and Bioengineering*, 99 (2008) 1434-1442.
66. L. Wang, X. Sun, R. Ghosh\*, Purification of equine IgG using membrane based enhanced hybrid bioseparation technique: A potential method for manufacturing hyperimmune antibody, *Biotechnology and Bioengineering*, 99 (2008) 625-633.
67. D. M. Kanani, R. Ghosh\*, A constant flux based mathematical model for predicting permeate flux decline in constant pressure protein ultrafiltration, *Journal of Membrane Science* 290 (2007) 207-215.
68. D. R. Latulippe, R. Ghosh, C.D.M. Filipe\*, Pulse injection technique for membrane characterization: Ultrafiltration of dextran solutions, *Journal of Membrane Science* 289 (2007) 268-276.
69. D. M. Kanani, E. Komkova, T. Wong, A. Mika, R.F. Childs, R. Ghosh\*, Separation of human plasma proteins HSA and HlgG using high-capacity macroporous gel-filled membranes, *Biochemical Engineering Journal* 35 (2007) 295-300.
70. R. Ghosh\*, T. Wong, Effect of module design on the efficiency of membrane chromatographic separation processes, *Journal of Membrane Science*, 281 (2006) 532-540.
71. L. Wang, D.M. Kanani, R. Ghosh\*, Purification of humanized monoclonal antibodies by membrane-based hybrid bioseparation technique, *Journal of Immunological Methods*, 314 (2006) 1-8.
72. L. Wang, G. Hale, R. Ghosh\*, Non size-based membrane chromatographic separation and analysis of monoclonal antibody aggregates, *Analytical Chemistry* 78 (2006) 6863-6867.
73. R. Ghosh\*, Rapid multiple antibody screening by membrane chromatographic immunoassay technique, *Journal of Chromatography B*, 844 (2006) 163-167.
74. R. Ghosh\*, L. Wang, Purification of humanized monoclonal antibody by hydrophobic interaction membrane chromatography, *Journal of Chromatography A* 1107 (2006) 104-109.
75. R. Ghosh\*, Membrane chromatographic immunoassay method for rapid quantitative analysis of specific serum antibodies, *Biotechnology and Bioengineering* 93 (2006) 280-285.
76. R. Ghosh\*, Enhancement of membrane permeability by gas-sparging in submerged hollow fibre ultrafiltration of macromolecular solutions: Role of module design, *Journal of Membrane Science* 274 (2006) 73-82.
77. R. Ghosh\*, Fractionation of human plasma proteins by hydrophobic interaction membrane chromatography, *Journal of Membrane Science* 260 (2005) 112-118.
78. C.D.M. Filipe and R. Ghosh\*, Effects of protein-protein interaction in ultrafiltration based fractionation processes, *Biotechnology and Bioengineering* 91 (2005) 678-687.
79. Y. Wan, R. Ghosh, G. Hale and Z.F. Cui\*, Fractionation of bovine serum albumin and monoclonal antibody Alemtuzumab using carrier phase ultrafiltration, *Biotechnology and Bioengineering* 90 (2005) 303-315.

80. Y. Wan, S.S. Vasan, R. Ghosh, G. Hale and Z.F. Cui\*, Separation of monoclonal antibody Alemtuzumab monomer and dimers using ultrafiltration, *Biotechnology and Bioengineering* 90 (2005) 422-432.
81. R. Ghosh\*, Separation of human albumin and IgG by a membrane-based integrated bioseparation technique involving simultaneous precipitation, microfiltration and membrane adsorption, *Journal of Membrane Science* 237 (2004) 109-117.
82. D. Kanani, R. Ghosh\* and C.D.M. Filipe, A novel approach for high-resolution protein-protein separation by ultrafiltration using a dual-facilitating agent, *Journal of Membrane Science* 243 (2004) 223-228.
83. Y. Wan, R. Ghosh and Z.F. Cui\*, Separation of human serum albumin and human immunoglobulins using carrier phase ultrafiltration, *Biotechnology Progress* 20 (2004) 1103-1112.
84. R. Ghosh\*, Novel cascade ultrafiltration configuration for continuous, high-resolution protein-protein fractionation: a simulation study, *Journal of Membrane Science* 226 (2003) 85-99.
85. R. Ghosh\*, Y. Wan, Z.F. Cui and G. Hale, Parameter scanning ultrafiltration: rapid optimization of protein separation, *Biotechnology and Bioengineering* 81 (2003) 673-682.
86. R. Ghosh\*, Purification of lysozyme by microporous PVDF membrane based chromatographic process, *Biochemical Engineering Journal* 14 (2003) 109-116.
87. R. Ghosh\*, Study of membrane fouling by BSA using pulsed injection technique, *Journal of Membrane Science* 195 (2002) 117.
88. R. Ghosh\*, Protein separation using membrane chromatography: opportunities and challenges (invited review article) *Journal of Chromatography A* 952 (2002) 13.
89. V. Seshadri, R. Ghosh and Z.F. Cui\*, Design of cone-and-plate test cell for ultrafiltration, *Desalination* 146 (2002) 219.
90. Y. Wan, R. Ghosh and Z.F. Cui\*, High-resolution ultrafiltration processes for protein fractionation, *Desalination* 144 (2002) 301.
91. R. Ghosh\*, Fractionation of biological macromolecules using carrier phase ultrafiltration, *Biotechnology and Bioengineering* 74 (2001) 1.
92. R. Ghosh\*, Novel membranes for simulating biological barrier transport, *Journal of Membrane Science* 192 (2001) 145.
93. R. Ghosh\*, Bioseparation using supported liquid membrane chromatography, *Journal of Membrane Science* 192 (2001) 243.
94. R. Ghosh\*, Separation of proteins using hydrophobic interaction membrane chromatography, *Journal of Chromatography A* 923 (2001) 59.
95. R. Ghosh\* and Z.F. Cui, Analysis of protein transport and polarization through membranes using pulsed sample injection technique, *Journal of Membrane Science* 175 (2000) 75.
96. R. Ghosh\* and Z.F. Cui, Simulation study of the fractionation of proteins using ultrafiltration, *Journal of Membrane Science* 180 (2000) 29.
97. R. Ghosh\* and Z.F. Cui, Purification of lysozyme using ultrafiltration, *Biotechnology and Bioengineering* 68 (2000) 191.
98. R. Ghosh\* and Z.F. Cui, Protein purification by ultrafiltration with pre-treated membrane, *Journal of Membrane Science* 167 (2000) 47.
99. R. Ghosh\*, S.S. Silva and Z.F. Cui, Lysozyme separation by hollow fibre ultrafiltration, *Biochemical Engineering Journal* 6 (2000) 19.

100. R. Ghosh\* and Z.F. Cui, Mass transfer in gas-sparged ultrafiltration: Upward slug flow in tubular membranes, *Journal of Membrane Science*, 162 (1999) 91.
101. R. Ghosh, Q.Y. Li and Z.F. Cui\*, Fractionation of BSA and lysozyme using ultrafiltration: Effect of gas sparging, *AIChE Journal*, 44 (1998) 61.
102. R. Ghosh and Z.F. Cui\*, Fractionation of BSA and lysozyme using ultrafiltration: Effect of pH and membrane pretreatment, *Journal of Membrane Science*, 139 (1998) 17.
103. Q.Y. Li, R. Ghosh, S.R. Bellara, Z.F. Cui\* and D.S. Pepper, Enhancement of ultrafiltration by gas sparging with flat sheet membrane modules, *Separation and Purification Technology*, 14 (1998) 79.
104. R. Ghosh, S.K. Sanyal, R.N. Mukherjea and P. Bhattacharya\*, Modeling and simulation of the washing phase of an affinity ultrafiltration system, *Separation Science and Technology*, 31 (1996) 125.
105. R. Ghosh, S.K. Sanyal, R.N. Mukherjea and P. Bhattacharya\*, Modeling and simulation of the elution phase of an affinity ultrafiltration system, *Separation Science and Technology*, 31 (1996) 679.
106. R. Ghosh\* and Z.F. Cui, Interference due to non-specific adsorption in ion exchange chromatography of proteins: The role of initial salt concentration in the separation and analysis of lysozyme, *Journal of Liquid Chromatography and Related Technologies* 23 (2000) 1619.

#### Book Chapters

1. R. Ghosh, Ultrafiltration based protein bioseparation, in *Handbook of Membrane Separations: Chemical, Pharmaceutical, and Biotechnological Applications* (Editors: A. K. Pabby, A. M. Sastre and S. S. H. Rizvi), CRC Press ISBN-10: 0849395496 (2008).
2. R. Ghosh, Application of ultrafiltration in the biopharmaceutical industry, in *Advanced Membrane Technology and Applications* (Editors: N. Li, A.G. Fane, W.S. Winston Ho, T. Matsuura), John Wiley and Sons ISBN: 978-0-471-73167-2 (2008).
3. R. Ghosh, Protein bioseparation using membrane adsorbers: combining high-resolution with high-throughput, in *Protein Production, Aggregation and Degradation in Recombinant Bacterial Factories* (Editor: A. Villaverde), Research Signpost ISBN: 81-7736-110-4 (2002).
4. K. Mohanty, R. Ghosh, Gas-sparged ultrafiltration: recent trends, applications and future challenges, in *Handbook of Environmental Engineering vol. 13* (Editors: L.K. Wang, J.P. Chen, Y.T. Hung, N.K. Shamma), Humana Press ISBN: 1588299406 (2010).
5. J.A. Shaeiwitz, J.D. Henry Jr, R. Ghosh, Bioseparations, *ULLMANN Encyclopedia of Industrial Chemistry*, Wiley-VCH Verlag GmbH (2012).
6. R. Ghosh, Application of membranes in biotechnology, *Encyclopedia of Membrane Science and Technology*, John Wiley and Sons (2013).
7. R. Ghosh, Membrane chromatography: current applications, future opportunities, and challenges. *Membrane Processing for Dairy Ingredient Separation*, Ed. Hu, K., Dickson, J.M., Wiley (2015).
8. R. Ghosh, Bioseparations using integrated membrane processes, *Integrated Membrane Systems and Processes*, Ed. A. Basile, C. Charcosset, Wiley (2016, in press)