

# List of Publications

Steven G. Gilmour

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## Refereed journal articles

1. Regalado, C., Asenjo, J. A., Pyle, D. L., Trinca, L. A. and Gilmour, S. (1994) Protein extraction by reverse micelles: horseradish peroxidase recovery maximisation by response surface methodology, and denaturation studies. *Transactions of the Institution of Chemical Engineers, Part C*, **72**, 123-134.
2. Gilmour, S. G. and Mead, R. (1995) Stopping rules for sequences of factorial designs. *Applied Statistics*, **44**, 343-355.
3. Gilmour, S. G, Mashaya, M. T. and Edmondson, R. N. (1995) Two-way block designs which are both neighbour balanced and trend resistant. *Aspects of Applied Biology*, **43**, *field experiment techniques*, 25-30.
4. Sensky, T., Leger, C. and Gilmour, S. (1996) Psychosocial and cognitive factors associated with adherence to dietary and fluid restriction regimens by people on chronic haemodialysis. *Psychotherapy and Psychosomatics*, **65**, 36-42.
5. Gilmour, S. G. (1996) The interpretation of Mallows's  $C_p$  statistic. *The Statistician*, **45**, 49-56.
6. Gilmour, S. G. and Mead, R. (1996) Fixing a factor in the sequential design of two-level fractional factorial experiments. *Journal of Applied Statistics*, **23**, 21-29.

7. Smith, N. K., Gilmour, S. G. and Rastall, R. A. (1996) The optimisation and semicontinuous synthesis of oligosaccharides. *Annals of the New York Academy of Sciences*, **799**, 608-611.
8. Tsai, P. W., Gilmour, S. G. and Mead, R. (1996) Letter to the Editors: An alternative analysis of Logothetis's plasma-etching data. *Applied Statistics*, **45**, 498-503.
9. Jauregi, P., Gilmour, S. and Varley, J. (1997) Characterisation of colloidal gas aphanes for subsequent use for protein recovery. *The Chemical Engineering Journal*, **65**, 1-11.
10. Smith, N. K., Gilmour, S. G. and Rastall, R. A. (1997) Statistical optimisation of enzymatic synthesis of derivatives of trehalose and sucrose. *Enzyme and Microbial Technology*, **21**, 349-354.
11. Solórzano, V., Gilmour, S. G., Phelps, K. and Kennedy, R. (1997) Assessment of suitable designs for field experiments involving airborne diseases. *Journal of Agricultural Science, Cambridge*, **129**, 249-256.
12. Kikafunda, J. K., Walker, A. F. and Gilmour, S. G. (1998) Effect of refining and supplementation on the viscosity and energy density of weaning maize porridges. *International Journal of Food Sciences and Nutrition*, **49**, 295-302.
13. Bowman, A., Gilmour, W. H., Constable, G., Davies, N., Gilmour, S. G. and Redfern, E. J. (1998) Computer-based learning in statistics: a problem solving approach. *The Statistician*, **47**, 314-327.
14. Trinca, L. A. and Gilmour, S. G. (1998) Variance dispersion graphs for comparing blocked response surface designs. *Journal of Quality Technology*, **30**, 349-364.
15. Mountzouris, K. C., Gilmour, S. G., Grandison, A. S. and Rastall, R. A. (1999) Modelling of oligodextrin production in an ultrafiltration stirred cell membrane reactor. *Enzyme and Microbial Technology*, **24**, 75-85.

16. Gilmour, S. G. and Ringrose, T. J. (1999) Controlling processes in food technology by simplifying the canonical form of fitted response surfaces. *Applied Statistics*, **48**, 91-101.
17. Mountzouris, K. C., Gilmour, S. G., Jay, A. J. and Rastall, R. A. (1999) A study of dextran production from maltodextrin by cell suspensions of *Gluconobacter oxydans* NCIB 4943. *Journal of Applied Microbiology*, **87**, 546-556.
18. Trinca, L. A. and Gilmour, S. G. (1999) Difference variance dispersion graphs for comparing response surface designs with applications in food technology. *Applied Statistics*, **48**, 441-455.
19. Trinca, L. A. and Gilmour, S. G. (2000) An algorithm for arranging response surface designs in small blocks. *Computational Statistics and Data Analysis*, **33**, 25-43. Erratum (2002), **40**, 475.
20. Tsai, P. W., Gilmour, S. G. and Mead, R. (2000) Projective three-level main effects designs robust to model uncertainty. *Biometrika*, **87**, 467-475.
21. Gilmour, S. G. and Trinca, L. A. (2000) Some practical advice on polynomial regression analysis from blocked response surface designs. *Communications in Statistics - Theory and Methods*, **29**, 2157-2180.
22. Trinca, L. A. and Gilmour, S. G. (2001) Multi-stratum response surface designs. *Technometrics*, **43**, 25-33.
23. Rosenthal, A., Pyle, D. L., Niranjana, K., Gilmour, S. and Trinca, L. (2001) Combined effect of operational variables and enzyme activity on aqueous enzymatic extraction of oil and protein from soybean. *Enzyme and Microbial Technology*, **28**, 499-509.
24. Butler, N. A., Mead, R., Eskridge, K. M. and Gilmour, S. G. (2001) A general method of constructing  $E(s^2)$ -optimal supersaturated designs. *Journal of the Royal Statistical Society, Series B*, **63**, 621-632.

25. Murphy, E. F., Gilmour, S. G. and Crabbe, M. J. C. (2002) Effective experimental design: enzyme kinetics in the bioinformatics era. *Drug Discovery Today*, **7**, S187-S191.
26. Mountzouris, K. C., Gilmour, S. G. and Rastall, R. A. (2002) Continuous production of oligodextrans via controlled hydrolysis of dextran in an enzyme membrane reactor. *Journal of Food Science*, **67**, 1767-1771.
27. Gilmour, S. G. and Trinca, L. A. (2003) Row-column response surface designs. *Journal of Quality Technology*, **35**, 184-193.
28. Murphy, E. F., Gilmour, S. G. and Crabbe, M. J. C. (2003) Efficient and accurate experimental design for enzyme kinetics: Bayesian studies reveal a systematic approach. *Journal of Biochemical and Biophysical Methods*, **55**, 155-178.
29. Bueno Filho, J. S. de S. and Gilmour, S. G. (2003) Planning incomplete block experiments when treatments are genetically related. *Biometrics*, **59**, 375-381.
30. Gilmour, S. G. and Mead, R. (2003) A Bayesian design criterion for locating the optimum point on a response surface. *Statistics and Probability Letters*, **64**, 235-242.
31. Gilmour, S. G. and Draper, N. R. (2003) Confidence regions around the ridge of optimal response on fitted second order response surfaces. *Technometrics*, **45**, 333-339.
32. Crabbe, M. J. C., Murphy, E. F. and Gilmour, S. G. (2003) A novel Bayesian approach to drug design with simple and complex enzymes: use with lens aldehyde dehydrogenase and the glyoxylase pathway. *Investigative Ophthalmology and Visual Science*, **44**, 426.
33. Varnalis, A. I., Brennan, J. G., MacDougall, D. B. and Gilmour, S. G. (2004) Optimisation of high temperature puffing of potato cubes using response surface methodology. *Journal of Food Engineering*, **61**, 153-163.

34. Murphy, E. F., Gilmour, S. G. and Crabbe, M. J. C. (2004) Efficient and cost-effective experimental determination of kinetic constants and data: the success of a Bayesian systematic approach to drug transport, receptor binding, continuous culture and cell transport kinetics. *Federation of European Biochemical Societies Letters*, **556**, 193-198.
35. Deardon, R., Gilmour, S. G., Butler, N. A., Phelps, K. and Kennedy, R. (2004) A method for ascertaining and controlling representation bias in field trials for airborne plant pathogens. *Journal of Applied Statistics*, **31**, 329-344.
36. Eskridge, K. M., Gilmour, S. G., Mead, R., Butler, N. A. and Travnicsek, D. A. (2004) Large supersaturated designs. *Journal of Statistical Computation and Simulation*, **74**, 525-542.
37. Gilmour, S. G. and Draper, N. R. (2004) Response to Letter to the Editor. *Technometrics*, **46**, 358.
38. Gilmour, S. G. (2004) Irregular four-level response surface designs. *Journal of Applied Statistics*, **31**, 1043-1048.
39. Tsai, P.-W., Gilmour, S. G. and Mead, R. (2004) Some new three-level orthogonal main effects plans robust to model uncertainty. *Statistica Sinica*, **14**, 1075-1084.
40. Gilmour, S. G. and Trinca, L. A. (2005) Fractional polynomial response surface models. *Journal of Agricultural, Biological and Environmental Statistics*, **10**, 50-60.
41. Gilmour, S. G. (2006) Response surface designs for experiments in bio-processing. *Biometrics*, **62**, 323-331.
42. Tsai, P. W., Gilmour, S. G. and Mead, R. (2006) Statistical isomorphism of three-level fractional factorial designs. *Utilitas Mathematica*, **70**, 3-10.
43. Deardon, R., Gilmour, S. G., Butler, N. A., Phelps, K. and Kennedy, R. (2006) Designing field experiments which are subject to representation bias. *Journal of Applied Statistics*, **33**, 665-680.

44. Parsons, N. R., Edmondson, R. N. and Gilmour, S. G. (2006) A generalized estimating equation method for fitting autocorrelated ordinal score data with an application in horticultural research. *Applied Statistics*, **55**, 507-524.
45. Tsai, P.-W., Gilmour, S. G. and Mead, R. (2006) Three-level main-effects designs exploiting prior information about model uncertainty. *Journal of Statistical Planning and Inference*, **137**, 619-627.
46. Bueno Filho, J. S. de S., Gilmour, S. G. and Rosa, G. J. M. (2006) Design of microarray experiments for genetical genomics studies. *Genetics*, **174**, 945-957.
47. Bueno Filho, J. S. de S. and Gilmour, S. G. (2007) Block designs for random treatment effects. *Journal of Statistical Planning and Inference*, **137**, 1446-1451.
48. Parker, B. M., Gilmour, S. G. and Schormans, J. (2009) Measurement of packet loss probability by optimal design of packet probing experiments. *IET Communications*, **3**, 979-991.

Accepted for publication:

1. Parsons, N. R., Gilmour, S. G. and Edmondson, R. N. Analysis of robust design experiments with time dependent ordinal response characteristics: a quality improvement study from the horticulture industry. To appear in *Journal of Applied Statistics*.
2. Gilmour, S. G. and Goos, P. (2009) Analysis of data from nonorthogonal multi-stratum designs in industrial experiments. *Journal of the Royal Statistical Society, Series C*, **58**, in press.
3. Ahmad, T. and Gilmour, S. G. Robustness of subset response surface designs to missing observations. To appear in *Journal of Statistical Planning and Inference*.

Submitted for publication:

1. Großmann, H., Schwabe, R. and Gilmour, S. G. Designs for first-order interactions in choice experiments with binary attributes. Under revision.
2. Eskridge, K. M. and Gilmour, S. G. Group screening designs based on unreduced incomplete block designs. Under revision for *Journal of Statistical Planning and Inference*.
3. Großmann, H. and Gilmour, S. G. Partially orthogonal blocked three-level response surface designs. Under revision for *Technometrics*.
4. Tsai, P.-W. and Gilmour, S. G. A general criterion for factorial designs under model uncertainty. Provisionally accepted for *Technometrics*.
5. Ahmad, T., Akhtar, M. and Gilmour, S. G. Multi-level augmented pairs second-order response surface designs and their robustness to missing data. Submitted to *Communications in Statistics - Theory and Methods*, March 2009.
6. Perkins, D., McKie, B., Malmqvist, B., Gilmour, S. G., Reiss, J. and Woodward, G. Global warming and biodiversity - ecosystem functioning relations across latitudes: comparing inter versus intraspecific variation. Submitted?
7. Gilmour, S. G. and Trinca, L. A. Bayesian optimal exact design of experiments for enzyme kinetic models. Under revision.
8. Arshad, H. M., Akhtar, M. and Gilmour, S. G. Augmented Box-Behnken third order response surface designs. Under revision.

## Refereed contributions to books

1. Regalado, C., Asenjo, J. A., Gilmour, S., Trinca, L. A. and Pyle, D. L. (1994) Optimisation of the reverse micellar extraction of horseradish peroxidase by response surface methodology. In *Separations for Biotechnology 3* (ed. D. L. Pyle), 406-412. Cambridge: SCI.

2. Apichartsrangkoom, A., Ledward, D. A., Bell, A. E. and Gilmour, S. G. (1998) Rheological behaviour of soya protein concentrate following high pressure treatment. In *High Pressure Food Science, Biosciences and Chemistry* (ed. N. Isaacs), 280-283. Cambridge: Royal Society of Chemistry.
3. Rosenthal, A., Ledward, D., Defaye, A., Gilmour, S. and Trinca, L. (2002) Effect of pressure, temperature, time and storage on peroxidase and polyphenol oxidase from pineapple. In *Trends in High Pressure Bioscience and Biotechnology* (ed. R. Hayashi), 525-532. New York: Elsevier.
4. Gilmour, S. G. and Trinca, L. A. (2006) Response surface experiments on processes with high variation. In *Response Surface Methodology* (ed. A. I. Khuri), 19-46. New York: World Scientific.
5. Gilmour, S. G. (2006) Supersaturated designs in factor screening. In *Screening* (ed. S. M. Lewis and A. M. Dean), 169-190. New York: Springer.
6. Baba, M. Y. and Gilmour, S. G. (2007) Bayesian estimation from saturated factorial designs. In *Bayesian Process Monitoring, Control and Optimization* (ed. B. M. Colosimo and E. del Castillo), 311-322. New York: Chapman & Hall/CRC.
7. Gilmour, S. G. (2007) Blocking. *Encyclopedia of Quality and Reliability* (ed. F. Ruggeri, R. Kenett and F. W. Faltin), New York: Wiley.

## Refereed conference proceedings

1. Ferris, S. and Gilmour, S. G. (1999) Blocking factorial designs in greenhouse experiments. *Proceedings of the 10th Kansas State University Conference on Applied Statistics in Agriculture*, 138-152.
2. Gilmour, S. G., Pardo, J. M., Trinca, L. A., Niranjana, K. and Mottram, D. S. (2000) A split-unit response surface design for improving

aroma retention in freeze dried coffee. *Proceedings of the 6th European Conference on Food-Industry and Statistics*, 18.0-18.9.

Submitted for publication:

1. Parker, B., Schormans, J. and Gilmour, S. G. Utility based optimisation of network measurement using the statistical principles of design of experiments. Submitted to *21st International Teletraffic Conference*, February 2009.

## Popular articles

1. Gilmour, S. G. (1994) Teaching statistics through games. In *Teaching and Using Statistics* (ed. N. Davies), 65-68. London: Royal Statistical Society.
2. Langton, A., Edmondson, R., Parsons, N., Gilmour, S. and Clarke, I. (2004) Pot plants and robust product design. *HDC News*, **104**, 26-28.
3. Gilmour, S. (2004) Improving a food process by experimentation. *Significance*, **1**, 127-129.

## Contributions to discussions

1. Discussion of “The nonorthogonal design of experiments” by R. Mead, 1990, *Journal of the Royal Statistical Society, Series A*, **153**, 151-201.
2. Discussion of “The problem of misplaced control limits” by L. C. Alwan and H. V. Roberts and “The rights and wrongs of control charts” by R. Caulcutt, 1995, *Applied Statistics*, **44**, 269-306.
3. Discussion of “Model uncertainty, data mining and statistical inference” by C. Chatfield, 1995, *Journal of the Royal Statistical Society, Series A*, **158**, 269-306.

4. Discussion of “The usefulness of optimum experimental designs” by A. C. Atkinson and “Experimental design and observation for large systems” by R. A. Bates, R. J. Buck, E. Riccomagno and H. P. Wynn, 1996, *Journal of the Royal Statistical Society, Series B*, **58**, 59-111.
5. Discussion of “The analysis of designed experiments and longitudinal data by using smoothing splines” by A. P. Verbyla, B. R. Cullis, M. G. Kenward and S. J. Welham, 1999, *Applied Statistics*, **48**, 269-311.
6. Discussion of “Bayesian analysis of agricultural field experiments” by J. Besag and D. Higdon, 1999, *Journal of the Royal Statistical Society, Series B*, **61**, 691-746.
7. Discussion of “Detection of interactions in experiments on large numbers of factors” by S. M. Lewis and A. M. Dean, 2001, *Journal of the Royal Statistical Society, Series B*, **63**, 633-672.
8. Discussion of “Multiple randomisations” by C. J. Brien and R. A. Bailey, 2006, *Journal of the Royal Statistical Society, Series B*, **68**, 571-609.
9. Discussion of “Parameter estimation for differential equations: a generalized smoothing approach” by J. O. Ramsay, G. Hooker, D. Campbell and J. Cao, 2007, *Journal of the Royal Statistical Society, Series B*, **69**, 741-796.