

List of Publications and Patents

1980-2015-April2016

Dr Tapio Salmi

**Professor in chemical reaction engineering 1998-
Academy Professor 2009-2013**



Peer-reviewed scientific articles (518)

Journal article (refereed), original research (500)

Review article, Literature review, Systematic review (8)

Book section, chapters in research books (10)

Conference abstracts (more than 580)

Scientific books (monographs)

Book (2)

Edited book, conference proceedings or special issue of a journal

Scientific reports

1. Åbo Akademi reports (49)

2. Others (9)

Publications intended for the general public

Theses

Patents and invention disclosures (3)

Pedagogical texts (10)

Peer-reviewed scientific articles

Journal article (refereed), original research. **Relevant articles for the application in BOLD**

1. Salmi, T., Gas Chromatographic determination of the product distribution in the synthesis of sodium borohydride, *Talanta* 30 (1983), 767-770 (Elsevier B.V., ISSN: 0039-9140)
2. Salmi, T., Modelling och simulering av kemiska reaktioner, *Kemia-Kemi* 12 (1985), 365-374 (Kempulssi Oy, ISSN: 0355-1628)
3. Salmi, T., Lindfors, L-E., A program package for simulation of coupled chemical reactions in flow reactors, *Computers & Industrial Engineering* 10 (1986), 45-68 (Elsevier Ltd., ISSN: 0360-8352)
4. Salmi, T., Lindfors, L-E., Boström, S., Modelling of the high temperature water gas shift reaction with stationary and transient experiments, *Chemical Engineering Science* 41 (1986), 929-936 (Elsevier Ltd., ISSN: 0009-2509)
5. Martikainen, P., Salmi T., Paatero, E., Hummelstedt, L., Klein, P., Damen, H., Lindroos, T., Kinetics of the homogeneous catalytic chlorination of acetic acid, *Journal of Chemical Technology & Biotechnology* 43 (1987), 259-274 (John Wiley & Sons, ISSN: 0268-2575)
6. Salmi, T., A computer exercise in Chemical Reaction Engineering and Applied Kinetics, *Journal of Chemical Education* 64 (1987), 876-878 (ACS Publications, ISSN: 0021-9584)
7. Salmi, T., A program package for simulation of heterogeneous catalytic reactions in ideal reactors, *Computers & Chemical Engineering* 11 (1987), 83-94 (Elsevier Ltd., ISSN: 0098-1354)
8. Salmi, T., Modelling and simulation of transient states of ideal heterogeneous catalytic reactors, *Chemical Engineering Science* 43 (1988), 503-511 (Elsevier Ltd., ISSN: 0009-2509)
9. Salmi, T., Martikainen P., Paatero, E., Hummelstedt, L., Damen, H., Lindroos, T., Kinetic model for the synthesis of monochloroacetic acid, *Chemical Engineering Science* 43 (1988), 1143-1151 (Elsevier Ltd., ISSN: 0009-2509)
10. Salmi, T., Boström, S., Lindfors, L-E., A dynamic study of the water- gas shift reaction over an industrial ferrochrome catalyst, *Journal of Catalysis* 112 (1988), 345-356 (Elsevier Inc., ISSN: 0021-9517)
11. Salmi, T., Hakkarainen, R., A kinetic study of the low temperature water - gas shift reaction over a Cu/ZnO-catalyst, *Applied Catalysis* 49 (1989), 285-306 (Elsevier B.V., ISSN: 0166-9834)
12. Salmi, T., Modelling and simulation of stationary catalytic processes, *International Journal of Chemical Kinetics* 21 (1989), 885-908 (John Wiley & Sons, ISSN: 0538-8066)
13. Westerholm, K., Salmi, T., Hakkarainen, R., Malen, T-E., A computer interface for kinetic experimentation in education, *Journal of Chemical Education* 66 (1989), 833-836 (ACS Publications, ISSN: 0021-9584)
14. Keiski, R. L., Salmi, T., Pohjola, V.J., Determination of the water- gas shift reaction and catalyst deactivation kinetics from non-isothermal fixed bed reactor data, *Acta Chemica Scandinavica* 44 (1990), 777-783 (Munksgaard International Publishers, ISSN: 0904-213X)
15. Romanainen, J., Salmi, T., The effect of reaction kinetics, mass transfer and flow pattern on non-catalytic and homogeneously catalyzed gas-liquid reactions in bubble columns, *Chemical Engineering Science* 47 (1990), 2493-2498 (Elsevier Ltd., ISSN: 0009-2509)
16. Salmi, T., Simultaneous determination of kinetic and diffusional parameters for a water-gas shift reaction catalyst, *Reaction Kinetics and Catalysis Letters* 41 (1990), 1-5 (Springer, ISSN: 0133-1736)
17. Westerlund, T., Salmi, T., Factorization of reaction systems applied to catalytic reactions, *Chemical*

Engineering Science 45 (1990), 237-241 (Elsevier Ltd., ISSN: 0009-2509)

18. Romanainen, J.J., Salmi, T., Numerical strategies in solving gas-liquid reactor models, Part I: Stagnant films and a steady state CSTR, *Computers & Chemical Engineering* 15 (1991), 769-781 (Elsevier Ltd., ISSN: 0098-1354)
19. Romanainen, J. J., Salmi, T., Numerical strategies in solving gas-liquid reactor models, Part II: Transient films and dynamic tank reactors, *Computers & Chemical Engineering* 15 (1991), 783-795 (Elsevier Ltd., ISSN: 0098-1354)
20. Salmi, T., Wärnå, J., Modelling of catalytic packed bed reactors: Comparison of different diffusion models, *Computers & Chemical Engineering* 15 (1991), 715-727 (Elsevier Ltd., ISSN: 0098-1354)
21. Keiski, R., Salmi, T., Pohjola, V., Development and verification of a detailed simulation model for fixed bed reactors, *Chemical Engineering Journal*, The 47 (1992), 17-29 (Elsevier B.V., ISSN: 0300-9467)
22. Keiski, R. L., Salmi, T., Deactivation kinetics of the high temperature water-gas shift catalyst at nonisothermal conditions, *Applied Catalysis A: General* 87 (1992), 185-203 (Elsevier B.V., ISSN: 0926-860X)
23. Lindfors, L.P., Salmi, T., Kinetics of toluene hydrogenation on a supported Ni/Al₂O₃-catalyst, *Industrial & Engineering Chemistry Research* 32 (1992), 34-42 (ACS Publications, ISSN: 0888-5885)
24. Paatero, E., Salmi, T., Fagerstolt, K., Selective synthesis of α -chlorocarboxylic acids, *Industrial & Engineering Chemistry Research* 31 (1992), 2425-2437 (ACS Publications, ISSN: 0888-5885)
25. Salmi, T., Wärnå, J., Lunden, P., Romanainen, J., Development of generalized models for heterogeneous chemical reactors, *Computers & Chemical Engineering* 16 (1992), 421-430 (Elsevier Ltd., ISSN: 0098-1354)
26. Hakkarainen, R., Salmi, T., Keiski, R.L., The water-gas shift reaction on a Co-Mo-oxide catalyst, *Applied Catalysis A: General* 99 (1993), 195-215 (Elsevier B.V., ISSN: 0926-860X)
27. Lindfors, L. P., Salmi, T., Smeds, S., Kinetics of toluene hydrogenation on a Ni/Al₂O₃ catalyst, *Chemical Engineering Science* 48 (1993) 22, 3813-3828 (Elsevier Ltd., ISSN: 0009-2509)
28. Salmi, T., Paatero, E., Fagerstolt, K., Kinetic model for synthesis of α -chlorocarboxylic acids, *Chemical Engineering Science* 48 (1993), 735-751 (Elsevier Ltd., ISSN: 0009-2509)
29. Salmi, T., Paatero, E., Fagerstolt, K., Optimization of the degree of backmixing in autocatalytic reactions - A case study: Chlorination of dodecanoic acid, *Chemical Engineering Research and Design* 71A (1993), 531-542 (Institution of Chemical Engineers (Elsevier), ISSN: 0263-8762)
30. Hakkarainen, R., Salmi, T., Keiski, R., Comparison of the dynamics of the water-gas shift reaction on oxide catalysts, *Catalysis Today* 20 (1994), 395-408 (Elsevier B.V., ISSN: 0920-5861)
31. Mäki-Arvela, P., Paatero, E., Salmi, T., The role of acetyl chloride in the chlorination of acetic acid, *Journal of Chemical Technology & Biotechnology* 61 (1994), 1-10 (John Wiley & Sons, ISSN: 0268-2575)
32. Mäki-Arvela, P., Salmi, T., Paatero, E., Kinetics of the chlorination of acetic acid with chlorine in the presence of chlorosulphonic acid and thionyl chloride, *Industrial & Engineering Chemistry Research* 33 (1994), 2073-2083 (ACS Publications, ISSN: 0888-5885)
33. Salmi, T., Paatero, E., Nyholm, P., Still, M., Närhi, K., Immonen, K., Kinetic model for the main and side reactions in the polyesterification of carboxylic acids with diols, *Chemical Engineering Science* 49 (1994), 3601-3616 (Elsevier Ltd., ISSN: 0009-2509)
34. Salmi, T., Paatero, E., Nyholm, P., Still, M., Närhi, K., Kinetics of melt polymerization of maleic and phthalic acids with propylene glycol, *Chemical Engineering Science* 49 (1994) 22, 5053-5070 (Elsevier Ltd., ISSN:

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35. Salmi, T., Valtakari, D., Paatero, E., Holmbom, B., Sjöholm, R., Kinetic study of the carboxymethylation of cellulose, *Industrial & Engineering Chemistry Research* 33 (1994), 1454-1459 (ACS Publications, ISSN: 0888-5885)
36. Sandelin, F., Oinas, P., Salmi, T., Haario, H., Kinetics of the catalyst deactivation in the recovery of active anthraquinones, *Studies in Surface Science and Catalysis* 88 (1994), 635-640 (Elsevier B.V., ISSN 0167-2991)
37. Wärnå, J., Turunen, I., Salmi, T., Maunula, T., Kinetics of reduction of nitrate in monolith reactor, *Chemical Engineering Science* 49 (1994) 22, 5763-5773 (Elsevier Ltd., ISSN: 0009-2509)
38. Lehtonen J., Salmi, T., Vuori, A., Haario H., Nousiainen P., Modelling of the kinetics of alkali fusion, *Industrial & Engineering Chemistry Research* 34 (1995), 3678-3687 (ACS Publications, ISSN: 0888-5885)
39. Mäki-Arvela, P., Salmi, T., Paatero, E., Kinetics of the chlorination of propanoic acid in the presence of chlorosulphonic acid, *Chemical Engineering Science* 50 (1995), 2275-2288 (Elsevier Ltd., ISSN: 0009-2509)
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41. Romanainen, J., Salmi, T., Wärnå, J., Development of numerical simulation strategies for gas-liquid tank and column reactors, *Acta Chimica Slovenica* 42 (1995), 125-136 (Slovenian Chemical Society, ISSN: 1318-0207)
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43. Salmi, T., Romanainen, J.J., A novel exit boundary condition for the axial dispersion model, *Chemical Engineering and Processing* 34 (1995), 359-366 (Elsevier B.V., ISSN: 0255-2701)
44. Smeds, S., Murzin, D., Salmi, T., Kinetics of ethylbenzene hydrogenation on Ni//Al₂O₃, *Applied Catalysis A: General* 125 (1995), 271-291 (Elsevier B.V., ISSN: 0926-860X)
45. Keiski, R.L., Salmi, T., Niemistö, P., Ainassaari, J., Pohjola, V.J., Stationary and transient kinetics of the high temperature water-gas shift reaction, *Applied Catalysis A: General* 137 (1996), 349-370 (Elsevier B.V., ISSN: 0926-860X)
46. Lehtonen, J., Salmi, T., Immonen, K., Paatero, E., Nyholm, P., Kinetic analysis of the reaction network in the catalyzed polyesterification of unsaturated carboxylic acids, *Chemical Engineering Science* 51 (1996), 2799-2804 (Elsevier Ltd., ISSN: 0009-2509)
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48. Mannila, P., Salmi, T., Haario, H., Härkönen, M., Luoma, M., Sohlo, J., Stationary kinetics of essential reactions on automobile exhaust Pt-Rd/Al₂O₃-catalyst, *Applied Catalysis B: Environmental* 7 (1996), 179-198 (Elsevier B.V., ISSN: 0926-3373)
49. Murzin, D., Salmi, T., Isothermal multiplicity in catalytic surface reactions with coverage dependent parameters: Case of polyatomic species, *Chemical Engineering Science* 51 (1996), 55-62 (Elsevier Ltd., ISSN: 0009-2509)
50. Rantakylä, T-K., Toppinen, S., Salmi, T., Aittamaa, J., Investigation of the hydrogenation of some substituted alkylbenzenes in a laboratory scale trickle bed reactor, *Journal of Chemical Technology &*

Biotechnology 67 (1996), 265-275 (John Wiley & Sons, ISSN: 0268-2575)

51. Smeds, S., Murzin, D., Salmi, T., Kinetics of *m*-xylene hydrogenation on Ni/Al₂O₃, *Applied Catalysis A: General* 141 (1996), 207-228 (Elsevier B.V., ISSN: 0926-860X)
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53. Smeds, S., Salmi, T., Murzin, D., Gas phase hydrogenation of *o*- and *p*-xylene on Ni/Al₂O₃ - Kinetic behaviour, *Applied Catalysis A: General* 145 (1996), 253-265 (Elsevier B.V., ISSN: 0926-860X)
54. Toppinen, S., Rantakylä, T-K., Salmi, T., Aittamaa, J., Kinetics of the liquid phase hydrogenation of benzene and some monosubstituted alkylbenzenes over a Ni catalyst, *Industrial & Engineering Chemistry Research* 35 (1996), 1824-1833 (ACS Publications, ISSN: 0888-5885)
55. Toppinen, S., Rantakylä, T-K., Salmi, T., Aittamaa, J., Kinetics of the liquid phase hydrogenation of di- and trisubstituted alkylbenzenes over a Ni catalyst, *Industrial & Engineering Chemistry Research* 35 (1996), 4424-4433 (ACS Publications, ISSN: 0888-5885)
56. Toppinen, S., Salmi, T., Aittamaa, J., Interfacial mass transfer in trickle-bed reactor modelling, *Chemical Engineering Science* 51 (1996), 4335-4345 (Elsevier Ltd., ISSN: 0009-2509)
57. Wärnå, J., Salmi, T., Dynamic modelling of catalytic three phase reactors, *Computers & Chemical Engineering* 20 (1996), 39-47 (Elsevier Ltd., ISSN: 0098-1354)
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59. Lehtonen J., Salmi, T., Vuori, A., Haario H., Optimization of the reaction conditions for complex kinetics in a semibatch reactor, *Industrial & Engineering Chemistry Research* 36 (1997), 5196-5206 (ACS Publications, ISSN: 0888-5885)
60. Maunula, T., Ahola, J., Salmi, T., Haario, H., Härkönen, M., Luoma, M., Pohjola, V., Investigation of CO oxidation and NO reduction on three-way monolith catalysts with transient response techniques, *Applied Catalysis B: Environmental* 12 (1997), 287-308 (Elsevier B.V., ISSN: 0926-3373)
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63. Mäki-Arvela, P., Tiainen, L., Gil, R., Salmi, T., Kinetics of the hydrogenation of citral over a supported Ni catalyst, *Studies in Surface Science and Catalysis* 108 (1997), 273-280 (Elsevier B.V., ISSN 0167-2991)
64. Rönnback, R., Salmi, T., Vuori, A., Haario, H., Lehtonen, J., Sundquist, A., Tirronen, E., Development of a kinetic model for the esterification of acetic acid with methanol in the presence of a homogeneous acid catalyst, *Chemical Engineering Science* 52 (1997), 3369-3381 (Elsevier Ltd., ISSN: 0009-2509)
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hydrocarbon mixtures, *Industrial & Engineering Chemistry Research* 36 (1997), 2101-2109 (ACS Publications, ISSN: 0888-5885)

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69. Salmi, T., Lehtonen, J., Reaktiokinetiikan mallinnus komplisoiduissa systeemeissä, *Kemia-Kemi* 25 (1998), 311-316 (Kempulssi Oy, ISSN: 0355-1628)
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74. Mäki-Arvela, P., Salmi, T., Sundell, M., Ekman, K., Comparison of polyvinylbenzene and polypropylene supported sulphonic acid catalysts in the esterification of acetic acid, *Applied Catalysis A: General* 184 (1999), 25-32 (Elsevier B.V., ISSN: 0926-860X)
75. Mikkola, J-P., Salmi, T., In-situ ultrasonic catalyst rejuvenation in three-phase hydrogenation of xylose, *Chemical Engineering Science* 54 (1999), 1583-1588 (Elsevier Ltd., ISSN: 0009-2509)
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