

LIST OF PUBLICATIONS

LEIF HOLMLID

A. Primary research publications

1. L. Holmlid, "Crossed molecular beam alkali - alkali halide chemical scattering: Apparatus, surface ionization detection and absolute measurements of cross sections". Ph.D. Thesis, Physical Chemistry, University of Göteborg 1973.

1a. "Introduction". Chapter 1.

1b. "Description of apparatus for reactive scattering experiments "CARE"". Chapter 2.

1c. "The half-period crossed field velocity filter as mass spectrometer in a surface ionization molecular beam detector". Chapter 3.

1d. "Desorption kinetics for surface ionization of alkali metals. The relation between experiments and theoretical models". Chapter 4.

1e. "Surface ionization of thermal alkali halide beams on contaminated surfaces". Chapter 5.

1f. "The determination of absolute reactive cross sections from crossed molecular beam experiments". Chapter 6.

2. L. Holmlid, "Exchange reactions on molecular beam detector (Pt-8%W) surfaces". J. Chem. Phys. 61 (1974) 1244-1245.

3. G. Aniansson, R.P. Creaser, W.D. Held, L. Holmlid and J.P. Toennies, "Molecular beam scattering experiments on the reaction $K + RbCl$: Absolute angular distributions and integral cross sections". J. Chem. Phys. 61 (1974) 5381-5388.

4. L. Holmlid, "Mass dispersion and mass resolution in crossed homogeneous electric and magnetic fields: the Wien velocity filter as a mass spectrometer". Int. J. Mass. Spectrom. Ion Phys. 17 (1975) 403-421.

5. L. Holmlid and J.O. Olsson, "Molecular beam surface ionization detection. I. Absolute ionization coefficients and work function of "low work function" Pt(8%W) surfaces". Surface Sci. 55 (1976) 523-544.

6. L. Holmlid, "Surface ionization molecular beam detector with a magnetic mass filter: application to absolute differential reactive cross section measurements". J. Phys. E 9 (1976) 464-470.

7. L. Holmlid and K. Rynefors, "Absolute complex formation cross sections for alkali-alkali halide collisions: a Monte Carlo trajectory study". Chem. Phys. 14 (1976) 403-412.

8. L. Holmlid and J.O. Olsson, "Simple surface ionization detector with field reversal for absolute ionization coefficient and ionic and neutral desorption measurements". Rev. Sci. Instr. 47 (1976) 1167-1171.

9. L. Holmlid and K. Rynefors, "Realistic translational energy distributions for decompositions of RRKM complexes with a centrifugal barrier". Chem. Phys. 19 (1977) 261-268.

10. L. Holmlid and J.O. Olsson, "Molecular beam surface ionization detection. II. Field reversal and surface ionization study of Na on Re with adsorbed oxygen". Surface Sci. 67 (1977) 61-76.

11. L. Holmlid and K. Rynefors, "Statistical and non-statistical features of a long-lived collision complex model for alkali - alkali halide reactive and non-reactive molecular beam scattering". Paper C, Ph.D. Thesis by K. Rynefors, Göteborg 1977.

12. L. Holmlid and K. Rynefors, "Angular distributions, complex formation cross sections and reaction probabilities evaluated by a RRKM model with the Monte Carlo method". Paper D, Ph.D. Thesis by K. Rynefors, Göteborg 1977.

13. L. Holmlid and J.O. Olsson, "Surface catalyzed reactions on carbon covered Pt(8%W). Direct exchange reaction and other surface reactions for $Na + CsCl$ ". Paper 4, Ph.D. Thesis by J.O. Olsson, Göteborg 1977.

14. L. Holmlid and K. Rynefors, "Uniformity of Congruential Pseudorandom Number Generators. Dependence on Length of Number Sequence and Resolution". J. Comput. Physics 26 (1978) 297-306.

15. L. Holmlid and K. Rynefors, in General Discussion, Faraday Discussion "Kinetics of State Selected Species", Birmingham, 9 - 11 April, 1979. Faraday Disc. Chem. Soc. 67 (1979) 228-229.
16. J.O. Olsson and L. Holmlid, "Desorption of potassium from carbon film surfaces". International Chalmers Symposium on Surface Problems in Materials Science and Technology, Göteborg, June 11 - 13, 1979. Mat. Sci. Eng. 42 (1980) 121-186.
17. L. Holmlid, B. Lönn and J.O. Olsson, "Apparatus with nanosecond field transition times for field reversal studies of surface processes at high temperatures". Rev. Sci. Instrum. 52 (1981) 63-67.
18. L. Holmlid and J.O. Olsson, "A molecular-beam study of the reactions of Na and CsCl on a carbon-covered surface". J. Catalysis 71 (1981) 9-20.
19. J.O. Olsson, L. Holmlid and K. Möller, "A time-of-flight mass spectrometric method based on pulsed surface ionization". "Dynamic Mass Spectrometry", Vol. 6 (D. Price, J.F.J. Todd, eds.), Heyden, London 1981. pp. 120-125.
20. L. Holmlid and K. Rynefors, "Monte Carlo simulation of RRKM unimolecular decomposition in molecular beam experiments. I. Basic considerations and calculational procedure". Chem. Phys. 60 (1981) 393-404.
21. K. Rynefors and L. Holmlid, "Monte Carlo simulation of RRKM unimolecular decomposition in molecular beam experiments. II. Application to angular distributions and absolute cross sections for the system K + RbCl". Chem. Phys. 60 (1981) 405-420.
22. L. Holmlid, "Mass spectrometric instrument for measuring very low fluxes of radicals and other reactive molecules". STU report 78-5817, Final report June 1981. In Swedish.
23. L. Holmlid, A. Sigurdsson and G. Nyman, "Lobular scattering of heavy molecules from low mass surface layers; Br₂ from a graphite covered surface". Surface Sci. 119 (1982) 107-117.
24. L. Holmlid, "Continuous alkali analyzer. Atmospheric surface ionization and aerosol detection". STU Report 80-3726, Final report April 1983. In Swedish.
25. L. Holmlid and K. Möller, "Experimental thermionic energy converter without enclosure: a molecular beam supplied converter". Applied Physics A 33 (1984) 199-204.
26. E. Axelsson and L. Holmlid, "Time-of-flight mass spectrometry with rapid field reversal: high transmission with continuous electron impact ionization". Int. J. Mass Spectrom. Ion Proc. 59 (1984) 231-246.
27. L. Holmlid, "Operation and mass resolution of a time-of-flight mass spectrometer with electron impact ionization and rapid field reversal". Int. J. Mass Spectrom. Ion Proc. 59 (1984) 247-259.
28. K. Rynefors, P.A. Elofson and L. Holmlid, "Monte Carlo simulation of RRKM unimolecular decomposition in molecular beam experiments. III. Application to angular distributions and branching fractions for the system K + CsF". Chem. Phys. 90 (1984) 347-360.
29. K. Möller and L. Holmlid, "Ion formation and acceleration with pulsed surface ionization: two modes for time-of-flight mass spectrometry". Int. J. Mass Spectrom. Ion Proc. 61 (1984) 323-335.
30. L. Holmlid and A. Sigurdsson, "Transport of bromine out from a graphite molecular beam source: a case of bulk diffusion". J. Appl. Phys. 57 (1985) 1102-1108.
31. L. Holmlid and K. Möller, "Cesium ion desorption from oxygen and carbon adlayers on platinum surfaces with nanosecond time resolution: variation of desorption parameters with time available for surface diffusion and degree of surface heterogeneity". Surface Sci. 149 (1985) 609-620.
32. L. Holmlid and E. Axelsson, "Pyrolysis of organic nitrates studied by molecular beam sampling: initial reaction steps and effects of stability of intermediates". In fil.lic. thesis by E. Axelsson, Göteborg, 1985.
33. L. Holmlid and E. Axelsson, "Reactions of organic nitrates with methanol at temperatures up to 600 K: efficiency as ignition improvers in alcohol fuels". In fil.lic. thesis by E. Axelsson, Göteborg, 1985.
34. G. Nyman and L. Holmlid, "Monte Carlo simulation of inelastic surface scattering; phonon transfer model applied to Br₂ and NO scattering from graphite surfaces". Surface Sci. 157 (1985) 61-73.
35. P.A. Elofson, K. Rynefors and L. Holmlid, "Monte Carlo simulation of RRKM unimolecular decomposition in molecular beam experiments. IV. Product OH angular and velocity distributions from O(¹D) + H₂". Chem. Phys. 100 (1985) 39-51.
36. K. Rynefors, P.A. Elofson and L. Holmlid, "Monte Carlo simulation of O(¹D) + H₂ and O(¹D) + HCl - Rotational excitation of product OH radicals". Chem. Phys. 100 (1985) 53-63.

37. K. Möller and L. Holmlid, "Desorption of cesium from pyrolytic graphite basal surfaces with strongly non-equilibrium behaviour".
Surface Sci. 163 (1985) L635-L640
38. K. Möller, L. Holmlid, B. Lönn and J.O. Olsson, "Molecular beam apparatus CHISS: an UHV chamber for studies of surface processes with a rapid external field reversal method".
Paper No. 1, Ph.D. Thesis by K. Möller, Göteborg 1985.
39. K. Möller and L. Holmlid, "Cesium ion desorption from graphite surfaces: kinetics and dynamics of diffusion and desorption steps".
Surface Sci. 173 (1986) 264-282.
40. L. Holmlid, K. Möller and E. Sanchez, "Rapid diffusion of cesium through metal foils: diffusion limiting at high current densities".
Surface Sci. 173 (1986) L627-L634.
41. K. Rynefors, L. Holmlid and P.A. Elofson, "Avoided scattering along the relative velocity vector - importance for crossed molecular beam experiments involving long-lived collision complexes".
J. Phys. Chem. 90 (1986) 5101-5105.
42. L. Andersson, J.O. Olsson and L. Holmlid, "Surface ionization at atmospheric pressure: partial melting of alkali salt particles".
Langmuir 2 (1986) 594-599.
43. S. Wriedt, K. Möller and L. Holmlid, "Emitter tests in an open thermionic converter with vapor injection through the collector".
J. Appl. Phys. 60 (1986) 4133-4135.
44. K. Möller and L. Holmlid, "Simultaneous determination of desorption parameters and barrier heights for release of previously absorbed tracer amounts of cesium and potassium from a platinum sample".
Surface Sci. 179 (1987) 267-282.
45. G. Nyman and L. Holmlid, "Inelastic scattering of Br₂ from graphite surfaces: a Monte Carlo classical trajectory study".
J. Chem. Phys. 85 (1986) 6163-6175.
46. A. Sigurdsson and L. Holmlid, "Diffusion and desorption steps in the transport of Br and Br₂ from a graphite effusion source at high temperatures, observed by molecular beam mass spectrometry".
J. Appl. Phys. 61 (1987) 2849-2855.
47. S. Höjer, H. Ahlberg, S. Lundqvist, J. Davidsson, and L. Holmlid, "IR diode laser absorption spectroscopy in an NO seeded molecular beam".
Infrared Physics 27 (1987) 261-266.
48. P.A. Elofson, K. Rynefors and L. Holmlid, "Monte Carlo simulation of RRKM unimolecular decomposition in molecular beam experiments. V. Product OX angular and energy distributions from O(³P) + X₂ (X=Br, I)".
Chem. Phys. 118 (1987) 1-16.
49. K. Rynefors, L. Holmlid and P.A. Elofson, "Rate constants for reactions O(³P) + X₂ → OX + X (X = Br, I) determined by an RRKM type statistical algorithm employing Monte Carlo simulation".
Chem. Phys. 118 (1987) 417-426.
50. S. Wriedt and L. Holmlid, "Work function measurements on rhenium foils in a directed cesium flux: thermionic converter applications".
Appl. Surface Sci. 31 (1987) 197-210.
51. K. Möller and L. Holmlid, "An electron emission study of a graphite covered platinum emitter for thermionic energy conversion: dissolution of carbon into the bulk of a metal".
Appl. Surface Sci. 29 (1987) 474-478.
52. G. Nyman, K. Rynefors and L. Holmlid, "Efficient microcanonical sampling for triatomic molecular systems; exact distributions verified".
J. Chem. Phys. 88 (1988) 3571-3580.
53. L. Holmlid and P.A. Elofson, Comment, Faraday Discussion "Dynamics of Elementary Gas Phase Reactions", Birmingham, 14-16 Sept., 1987.
Faraday Discuss. Chem. Soc. 84 (1988) 95-97.
54. G. Nyman, K. Rynefors and L. Holmlid, "Energy distributions from decomposition of a complex H₂O → OH + H on a simplified potential energy surface, as a function of total angular momentum: comparison between classical trajectories and an RRKM-type statistical simulation".
Chem. Phys. 134 (1989) 355-373.
55. K. Möller and L. Holmlid, "Rate constants for cesium bulk diffusion and neutral desorption on pyrolytic graphite basal surfaces: a field reversal kinetic study".
Surface Sci. 204 (1988) 98-112.
56. J.B.C. Pettersson, G. Nyman and L. Holmlid, "A classical trajectory study of inelastic scattering of NO from graphite surfaces: Rotational energy distributions".
J. Chem. Phys. 89 (1988) 6963-6971.
57. T. Hansson, J.B.C. Pettersson and L. Holmlid, "A molecular beam mass-spectrometric study of isopropyl nitrate pyrolysis reactions at short residence times and temperatures up to 700 K".
J. Chem. Soc., Faraday Trans. 2, 85 (1989) 1413-1423.
58. J. Lundin, J.B.C. Pettersson, K. Möller, and L. Holmlid, "Observation of negative ions of cesium from thermionic converters and in desorption from metal surfaces".

- Proceedings 23rd Intersociety Energy Conversion Engineering Conference, The American Association of Mechanical Engineers, New York 1988, Vol. 1, p. 591-595.
59. J.B.C. Pettersson and L. Holmlid, "Rydberg states of cesium in the flux from surfaces at high temperatures". *Surface Sci.* 211 (1989) 263-270.
60. J. Lundin and L. Holmlid, "Sampling of a hot Cs plasma with a QMS in a thermionic energy converter". "Advances in Mass Spectrometry", Vol. 11A (Ed. P. Longevialle), Heyden & Son, London, 1989, p. 204-205.
61. J. Davidsson and L. Holmlid, "Dimers and tetramers of SiCl in a molecular beam from a heterogeneous, intermediate pressure reactor". *J. Chem. Soc., Faraday Trans. 2*, 85 (1989) 831-838.
62. L. Holmlid and S. Wall, "Atmospheric surface ionization of alkali salt aerosols: particles of inorganic salts and of a micelle forming salt". *J. Aerosol Sci.* 19 (1988) 1219-1222.
63. L. Holmlid and S. Wall, "Surface ionization at atmospheric pressure. 2. Particles of inorganic alkali salts and of sodium dodecyl sulfate". *Langmuir* 5 (1989) 1170-1175.
64. T. Hansson, C. Åman, J.B.C. Pettersson and L. Holmlid, "Large fluxes of highly excited caesium ions from a diffusion source". *J. Phys. B: At. Mol. Opt. Phys.* 23 (1990) 2163-2171.
65. J.B.C. Pettersson, L. Holmlid and K. Möller, "Alkali promoter function in heterogeneous catalysis: possibility of interaction in the form of Rydberg states". *Appl. Surface Sci.* 40 (1989) 151-154.
66. J.B.C. Pettersson, A. Sigurdsson, G. Nyman and L. Holmlid, "Inelastic surface scattering of Xe and SF₆ from graphite surfaces at high temperatures". *Surface Sci.* 232 (1990) 329-338.
67. J. Lundin and L. Holmlid, "Electron excitation energy transfer from highly excited Cs atoms forming high Rydberg state atoms and molecules". *J. Phys. Chem.* 95 (1991) 1029-1034.
68. C. Åman, J.B.C. Pettersson and L. Holmlid, "Field ionizable cesium metal clusters from a foil diffusion source". *Chem. Phys.* 147 (1990) 189-197.
69. G. Nyman, L. Holmlid and J.B.C. Pettersson, "Surface scattering of NO from graphite: A statistical description of energy distributions". *J. Chem. Phys.* 93 (1990) 845-853.
70. P.-A. Elofson and L. Holmlid, "Statistical description of rotational distributions of OH(*v,N*) from the reaction O(³P) + HCl(*v,J*) → OH + Cl". *Chem. Phys. Letters*. 166 (1990) 112-115.
71. J. Lundin, K. Engvall, L. Holmlid and P.G. Menon, "Mechanism of potassium loss by desorption from an iron oxide catalyst for the styrene process". *Catal. Letters* 6 (1990) 85-94.
72. R. Svensson, L. Holmlid and L. Lundgren, "Field ionization of Rydberg atoms in a thermionic converter". Proceedings Thermionic Energy Conversion, Specialist Conference, (eds. L.R. Wolff, W.B. Veltkamp, J.M.W.M. Schoonen and H.A.M. Hendriksen), Eindhoven University of Technology, Eindhoven, 1990, p. 63-66.
73. J. Lundin and L. Holmlid, "Excited states of Cs in a thermionic energy converter". Proceedings Thermionic Energy Conversion, Specialist Conference, (eds. L.R. Wolff, W.B. Veltkamp, J.M.W.M. Schoonen and H.A.M. Hendriksen), Eindhoven University of Technology, Eindhoven, 1990, p. 67-70.
74. T. Hansson, J.B.C. Pettersson and L. Holmlid, "Rate constants for cesium ion and atom desorption on iridium with graphite islands: parallel processes studied by field reversal". *Surface Sci.* 253 (1991) 345-352.
75. C. Åman, J.B.C. Pettersson, H. Lindroth and L. Holmlid, "Visible luminescence from particles on surfaces: Evidence of de-excitation of Rydberg matter". *J. Mat. Research* 7 (1992) 100-104.
76. C. Åman and L. Holmlid, "Rydberg states of caesium from a diffusion source: pulsed field ionization and lifetimes". *J. Phys. D.: Applied Physics* 24 (1991) 1049-1053.
77. R. Svensson, L. Holmlid and L. Lundgren, "Semi-conducting low pressure, low temperature plasma of cesium with unidirectional conduction". *J. Appl. Phys.* 70 (1991) 1489-1492.
78. K. Engvall, L. Holmlid and P.G. Menon, "Comparative loss of alkali promoter by desorption from two catalysts for the dehydrogenation of ethyl benzene to styrene". *Appl. Catal.* 77 (1991) 235-241.
79. K. Engvall, L. Holmlid, H. Prinz and H. Hofmann, "Loss of alkali promoter by desorption from promoted vanadium oxide catalysts". *Catal. Letters*. 11 (1991) 41-48.
80. E. Wallin and L. Holmlid, "Excited states of hydrogen emitted from a graphite diffusion source: Arrhenius behaviour". *Chem. Phys.* 159 (1992) 313-319.
81. E. Wallin, T. Hansson and L. Holmlid, "Field ioniza-

- tion of cesium atoms diffusing out from an iridium foil, studied by time-of-flight mass spectrometry".
Int. J. Mass Spectrom. Ion Proc. 114 (1992) 31-45.
82. J. Lundin and L. Holmlid, "Negative ions formed at grid surfaces in a flux of excited Cs atoms and ions".
Int. J. Mass Spectrom. Ion Proc. 114 (1992) 137-147.
83. L. Holmlid, J.B.C. Pettersson, C. Åman, B. Lönn and K. Möller, "Source for excited states of alkali atoms and clusters using diffusion through a thin graphite foil".
Rev. Sci. Instrum. 63 (1992) 1966-1968.
84. L. Holmlid and R. Svensson, "Kollektor för termojonvandlare". Swedish patent nr 9102263-2, 1991, "Collector for thermionic energy converter covered with carbon like material and having a low electronic work function", US Patent 5,578,886, 1994.
85. R. Svensson and L. Holmlid, "Very low work function surfaces from condensed excited states: Rydberg matter of cesium".
Surface Sci. 269/270 (1992) 695-699.
86. K. Engvall and L. Holmlid, "Field ionization of excited alkali atoms emitted from catalyst surfaces".
Appl. Surface Sci. 55 (1992) 303-308.
87. E. Wallin, P.-A. Elofson and L. Holmlid, "Statistical description of vibrational excitation in the crossed beam reaction $C(^3P) + NO \rightarrow CN(v) + O(^3P)$ ".
Chem. Phys. 163 (1992) 37-42.
88. C. Åman and L. Holmlid, "Hydrocarbon clusters from a foil diffusion source".
J. Cluster Sci. 3 (1992) 247-257.
89. L. Holmlid, K. Engvall, C. Åman and P. G. Menon, "A new approach to loss of alkali promoter from industrial catalysts: importance of excited states of alkali". "New Frontiers in Catalysis", Proceedings of the 10th International Congress on Catalysis (eds. L. Guzzi, F. Solymosi and P. Tétényi), Akadémiai Kiadó, Budapest 1993, p. 795-807.
90. E. Wallin, T. Hansson and L. Holmlid, "Highly excited Rydberg states of hydrogen from a high-temperature diffusion source".
J. Phys.: Condensed Matter 4 (1992) 9803-9810.
91. R. Svensson and L. Holmlid, "Temperature studies and plasma probing of a Rydberg matter collector in a thermionic energy converter".
Proceedings 27th Intersociety Energy Conversion Engineering Conference, (IECEC 1992, San Diego), Society of Automotive Engineers, Warrendale 1992, Vol. 3, p. 537-542.
92. C. Åman and L. Holmlid, "Desorption and emission of potassium Rydberg atoms and clusters from iron oxide catalyst surfaces".
Appl. Surface Sci. 62 (1992) 201-208.
93. T. Hansson and L. Holmlid, "Large hysteresis effect in surface ionization of Cs due to bulk diffusion".
Surface Sci. 281 (1993) 309-316.
94. R. Svensson, K. Engvall, L. Holmlid, J. Braun and L. Lundgren, "High emissivity electrodes for MHD channels".
Proceedings Eleventh International Conference on Magnetohydrodynamic Electrical Power Generation, Beijing, 1992. International Academic Publishers, Beijing, Vol. 1, p. 248-252.
95. C. Åman and L. Holmlid, "Field ionization of Rydberg alkali states outside iron oxide catalyst surfaces: peaked angular distributions of ions".
Appl. Surface Sci. 64 (1993) 71-80.
96. T. Hansson and L. Holmlid, "Velocity distribution of Cs atoms emitted from a hot graphite-covered Ir surface after diffusion through the Ir bulk".
Surface Sci. 282 (1993) L370-374.
97. E. Wallin, T. Hansson and L. Holmlid, "Highly excited states of cesium from a diffusion source: gas phase ionization reactions".
Int. J. Mass Spectrom. Ion Proc. 125 (1993) 187-193.
98. A. Nyberg and L. Holmlid, "Work function for surfaces of Rydberg matter: a jellium approach".
Surface Sci. 292 (1993) L801-L802.
99. L. Holmlid, "Rydberg states and Rydberg matter in thermionic energy converters".
Invited talk, Proceedings Thermionic Energy Conversion 1993, Specialist Conference (eds. L. Holmlid and R. Svensson), Göteborg 1993, p. 47-55.
100. R. Svensson, L. Holmlid and E. Kennel, "Experiments with different collector hole matrices in a Thermionic Energy Converter".
Proceedings Thermionic Energy Conversion 1993, Specialist Conference (eds. L. Holmlid and R. Svensson), Göteborg 1993, p. 93-95.
101. J. Lundin and L. Holmlid, "Excited cesium atoms and clusters from an open thermionic energy converter studied by TOF-MS".
Proceedings Thermionic Energy Conversion 1993, Specialist Conference (eds. L. Holmlid and R. Svensson), Göteborg 1993, p. 97-101.
102. R. Svensson, L. Holmlid and Y. Olefjord, "ESCA (XPS) analysis of TEC emitter and collector surfaces used to generate Rydberg matter of Cs".
Proceedings Thermionic Energy Conversion 1993, Specialist Conference (eds. L. Holmlid and R. Svensson), Göteborg 1993, p. 143-148.

103. J. Lundin, L. Holmlid, P.G. Menon and L. Nyborg, "Surface composition of iron oxide catalysts used for styrene production: an Auger electron spectroscopy/scanning electron microscopy study". *Ind. & Eng. Chem. Research* 32 (1993) 2500-2505.
104. P.-A. Elofson and L. Holmlid, "Statistical simulation of IF angle and angle-velocity distributions from the crossed beam reaction $F + I_2 \rightarrow IF + I$ ". *Chem. Phys.* 178 (1994) 315-327.
105. R. Svensson and L. Holmlid, "Experiment with a diamond covered Mo emitter in a thermionic energy converter". 28th Intersociety Energy Conversion Engineering Conference Proceedings, (IECEC 1993, Atlanta), American Chemical Society, Washington 1993, Vol. 1, p. 1063-1067.
106. K. Engvall, A. Kotarba and L. Holmlid, "Emission of excited potassium species from an industrial iron catalyst for ammonia synthesis". *Catal. Letters* 26 (1994) 101-107.
107. J. Lundin and L. Holmlid, "A TOFMS study of excited cesium species from a thermal plasma device". *Int. J. Mass Spectrom. Ion. Proc.* 134 (1994) 129-140.
108. L. Holmlid, J.B.C. Pettersson, T. Hansson and E. Wallin, "Open source for excited species of alkali atoms and ions using diffusion through a thin metal foil". *Rev. Sci. Instrum.* 65 (1994) 2034-2043.
109. E. Wallin, P.A. Elofson and L. Holmlid, "Rotational surprisals and energy disposal from statistical simulations of the crossed beam reaction $C(^3P) + NO \rightarrow CN(v) + O(^3P)$ ". *Chem. Phys.* 185 (1994) 91-100.
110. M. Svanberg and L. Holmlid, "Work function of Rydberg matter surfaces from jellium calculations". *Surface Sci.* 315 (1994) L1003-L1006.
111. L. Holmlid, "Scattering of a potassium atom beam from potassium promoted catalyst surfaces via electronically excited clusters". *Z. Phys. D.* 34 (1995) 199-212.
112. R. Svensson, B. Lönn and L. Holmlid, "Apparatus for efficient atomic level studies of alkali plasmas using sampling, probing and spectroscopic methods". *Rev. Sci. Instrum.* 66 (1995) 3244-3253.
113. A. Kotarba, K. Engvall, J.B.C. Pettersson, M. Svanberg and L. Holmlid, "Angular resolved neutral desorption of potassium promoter from surfaces of iron catalysts". *Surface Sci.* 342 (1995) 327-340.
114. K. Engvall, L. Holmlid, A. Kotarba, J.B.C. Pettersson, P.G. Menon and P. Skaugset, "Potassium Promoter in Industrial Ammonia Synthesis Catalyst: Studies by Surface Ionization". *Appl. Catal.* 134 (1996) 239-246.
115. M. Andersson, J. Wang and L. Holmlid, "Angular resolved desorption of potassium ions from basal graphite surfaces: ionization of Rydberg species with and without a K beam". *J. Chem. Soc., Faraday Trans.* 92 (1996) 4581-4588.
116. R. Svensson and L. Holmlid, "TEC as electric generator in automobile catalytic converter". 31st Intersociety Energy Conversion Engineering Conference Proceedings (IECEC 1996), IEEE, Piscataway, USA, 1996, Vol. 2, p. 941-944.
117. L. Holmlid and E.A. Manykin, "Rydberg matter - a longlived excited state of matter". *Journal of Experimental and Theoretical Physics JETP* 84 (1997) 875-880.
118. L. Holmlid and J. Wang, "Electric field control of rapid diffusion of K atoms into a graphite surface". *Chem. Phys. Letters* 268 (1997) 285-290.
119. R. Svensson and L. Holmlid, "Fast Pulsing of an Open Research Thermionic Converter". 32th Intersociety Energy Conversion Engineering Conference Proceedings (IECEC 1997), AIChE, New York, USA, 1997, Vol. 2, 1071-1074.
120. J. Wang, R. Andersson and L. Holmlid, "Thermal formation of clusters K_2^+ and K_4^+ at very low surface densities". *Surface Sci.* 399 (1998) L337-341.
121. M. Hagström, J. Davidsson and L. Holmlid, "Transport of charge and atomic particles in Rydberg state-rich plasmas". *J. Phys. D: Appl. Phys.* 31 (1998) 434-445.
122. R. Svensson and L. Holmlid, "Catalytic converter". Swedish Patent application No. 9604816-0, International PCT/SE97/02169, US Patent application "Thermionic energy conversion arrangement".
123. L. Holmlid, "Nanosecond switching, field reversal evidence of Rydberg atom desorption from surfaces". *Chem. Phys.* 230 (1998) 327-344.
124. L. Holmlid, "Classical energy calculations with electron correlation of condensed excited states - Rydberg Matter". *Chem. Phys.* 237 (1998) 11-19.
125. J. Wang and L. Holmlid, "Planar clusters of Rydberg Matter K_N ($N = 7, 14, 19, 37, 61$) detected by multiphoton fragmentation time-of-flight mass spectrometry".

Chem. Phys. Letters 295 (1998) 500-508.

126. J. Wang, K. Engvall and L. Holmlid, "Cluster K_N formation by Rydberg collision complex stabilization during scattering of a K beam off zirconia surfaces". *J. Chem. Phys.* 110 (1999) 1212-1220.

127. L. Holmlid, "Complex kinetics of desorption and diffusion. Field reversal study of K excited-state desorption from graphite layer surfaces". *J. Phys. Chem. A* 102 (1998) 10636-10646.

128. K. Engvall, A. Kotarba and L. Holmlid, "Long-range diffusion of K promoter on an ammonia synthesis catalyst surface - ionization of excited potassium species in the sample edge fields". *J. Catal.* 181 (1999) 256-264.

129. J. Wang and L. Holmlid, "Ion K_N^+ time-of-flight angular distributions for K beam scattering and cluster formation at graphite surfaces". *Surf. Sci.* 425 (1999) 81-89.

130. R. Svensson and L. Holmlid, "Electronic Raman processes in Rydberg Matter of Cs: circular Rydberg states in Cs and Cs^{+} ". *Phys. Rev. Lett.* 83 (1999) 1739-1742.

131. R. Svensson and L. Holmlid, "Raman spectroscopy of the plasma in an open research thermionic converter", Paper 1999-01-2461, 34th Intersociety Energy Conversion Engineering Conference (IECEC 1999), USA, 1999.

132. L. Holmlid, "A novel model for the interpretation of the unidentified infrared (UIR) bands from interstellar space: deexcitation of Rydberg Matter". *Astron. Astrophys.* 358 (2000) 276-286.

133. L. Holmlid, "Condensed phase and clusters of Rydberg Matter probed with laser methods". *Bull. Am. Phys. Soc.* 45 (2000) 55-56.

134. A. Kotarba, A. Baranski, S. Hodorowicz, J. Sokolowski, A. Szytula, and L. Holmlid, "Stability and excitation of potassium promoter in iron catalysts - the role of $KFeO_2$ and $KAlO_2$ phases". *Catal. Letters* 67 (2000) 129-134.

135. J. Wang and L. Holmlid, "Polarization effects in laser photofragmentation of Rydberg Matter clusters K_N^* in a weak electric field". *Chem. Phys. Lett.* 325 (2000) 264-268.

136. L. Holmlid and P.G. Menon, "Emission and Loss of Potassium Promoter from Styrene Catalysts: Studies by UHV/Molecular-Beam and Laser Techniques". *Appl. Catal. A* 212 (2001) 247-255.

137. J. Wang and L. Holmlid, "Formation of long-lived Rydberg states of H_2 at K impregnated surfaces".

Chem. Phys. 261 (2000) 481-488.

138. L. Holmlid, "Coherent broadband light effects in grating spectrometer studies of emission from alkali atoms at surfaces". *J. Opt. Soc. Am. A* 18 (2001) 367-373.

139. L. Holmlid, "Stimulated laser Raman processes in low density Rydberg Matter: wave number and intensity blueshifts". *Phys. Rev. A* 63 (2001) 013817-1-013817-10.

140. L. Holmlid, "Stimulated Raman spectroscopy of a K-promoted catalyst surface: spectroscopic evidence of K^* Rydberg state formation". *Langmuir* 17 (2001) 268-270.

141. L. Holmlid, "Observation of the unidentified infrared (UIR) bands in the laboratory: anti-Stokes stimulated Raman spectroscopy of a Rydberg Matter surface boundary layer". *Astrophys. J.* 548 (2001) L249-L252.

142. J. Wang and L. Holmlid, "Rydberg Matter clusters of hydrogen $(H_2)_N^*$ with well defined kinetic energy release observed by neutral time-of-flight". *Chem. Phys.* 277 (2002) 201-210.

143. S. Badiei and L. Holmlid, "Rydberg Matter in space - low density condensed dark matter". *Mon. Not. R. Astron. Soc.* 333 (2002) 360-364.

144. S. Badiei and L. Holmlid, "Rydberg Matter of K and N_2 : angular dependence of the time-of-flight for neutral and ionized clusters formed in Coulomb explosions". *Int. J. Mass Spectrom.* 220 (2002) 127-136.

145. S. Badiei and L. Holmlid, "Neutral Rydberg Matter clusters from K: extreme cooling of translational degrees of freedom observed by neutral time-of-flight". *Chem. Phys.* 282 (2002) 137-146.

146. S. Badiei and L. Holmlid, "Magnetic field in the intracluster medium: Rydberg matter with almost free electrons". *Mon. Not. R. Astron. Soc.* 335 (2002) L94-L98.

147. L. Holmlid, "First experimental observation of IR emission from Rydberg Matter: detection of light from a deexciting layer". *Chem. Phys. Lett.* 367 (2003) 556-560.

148. L. Holmlid, "Conditions for forming Rydberg Matter: condensation of Rydberg states in the gas phase versus at surfaces". *J. Phys.: Condens. Matter* 14 (2002) 13469-13479.

149. F. Olofson, S. Badiei and L. Holmlid, "Adsorbed water molecules on a K-promoted catalyst surface studied by stimulated micro-Raman spectroscopy".

Langmuir 19 (2003) 5756-5762.

150. S. Badiei and L. Holmlid, "Stimulated emission in Rydberg Matter - a thermal ultra-broadband tunable laser". Chem. Phys. Lett. 376 (2003) 812-817.

151. L. Holmlid, "Optical stimulated emission transitions in Rydberg Matter observed in the range 800 - 14000 nm". J. Phys. B: At. Mol. Opt. Phys. 37 (2004) 357-374.

152. L. Holmlid, "Interaction between infrared laser modes in Rydberg Matter: redshifted modes in reflection and blueshifted in transmission". Eur. Phys. J. Appl. Phys. 26 (2004) 103-111.

153. L. Holmlid, "Quantized redshifts of galaxies: stimulated Raman scattering in cold intergalactic Rydberg Matter". Astrophys. Space Sci. 291 (2004) 99-111.

154. L. Holmlid, "Rydberg Matter as the diffuse interstellar band (DIB) carriers in interstellar space: the model and accurate calculations of band centers". Phys. Chem. Chem. Phys. 6 (2004) 2048-2058.

155. S. Badiei and L. Holmlid, "Lowest state $n = 1$ of H atom Rydberg Matter: many eV energy release in Coulomb explosions". Phys. Lett. A 327 (2004) 186-191.

156. L. Holmlid, "Detection of frequency red shifts and blue shifts for single-mode IR laser radiation in Rydberg matter". Appl. Phys. B 79 (2004) 871-877.

157. S. Badiei and L. Holmlid, "Experimental observation of an atomic hydrogen material with H - H bond distance of 150 pm suggesting metallic hydrogen". J. Phys.: Condens. Matter 16 (2004) 7017-7023.

158. L. Holmlid, "Phase-delay Rabi-flopping spectroscopy: a method sensitive to Rydberg species at surfaces". J. Phys. Chem. A 108 (2004) 11285-11291.

159. L. Holmlid, "Redshifts in space caused by stimulated Raman scattering in cold intergalactic Rydberg Matter with experimental verification". J. Exp. Theor. Phys. JETP 100 (2005) 637-644 (Zh. Eksp. Teor. Fiz. 100 (2005) 723-731).

160. S. Badiei and L. Holmlid, "The Rydberg Matter laser: excitation, delays and mode effects in the laser cavity medium". Appl. Phys. B 81 (2005) 549-559.

161. S. Badiei and L. Holmlid, "Laser initiated detonation in Rydberg Matter with a fast propagating shock wave, releasing protons with keV kinetic energy". Phys. Lett. A 344 (2005) 265-270.

162. H. Åkesson, S. Badiei and L. Holmlid, "Angular variation of time-of-flight of neutral clusters released from Rydberg Matter: primary and secondary Coulomb explosion processes". Chem. Phys. 321 (2006) 215-222.

163. S. Badiei and L. Holmlid, "Atomic hydrogen in condensed form produced by a catalytic process: a future energy-rich fuel?" Energy and Fuels 19 (2005) 2235-2239.

164. L. Holmlid, "Rydberg Matter as the dust atmosphere in comets: spectroscopic and polarization signatures". Icarus 180 (2006) 555-564.

165. L. Holmlid, "The alkali metal atmospheres on the Moon and Mercury: explaining the stable exospheres by heavy Rydberg Matter clusters". Planetary Space Sci. 54 (2006) 101-112.

166. L. Holmlid, "Amplification by stimulated emission in Rydberg Matter clusters as the source of intense maser lines in interstellar space". Astrophys. Space Sci. 305 (2006) 91-98.

167. S. Badiei and L. Holmlid, "Experimental studies of fast fragments of H Rydberg matter". J. Phys. B: At. Mol. Opt. Phys. 39 (2006) 4191-4212.

168. T. Alpermann and L. Holmlid, "Confocal laser microspectroscopic Rabi-flopping study of an iron oxide emitter surface used for Rydberg Matter generation". Spectrochim. Acta A (2007) in press.

169. L. Holmlid, "Stimulated emission spectroscopy of Rydberg Matter: observation of Rydberg orbits in the core ions". Appl. Phys. B, accepted 06-12-21.

170. L. Holmlid, "Precision bond lengths for Rydberg Matter clusters K_{19} in excitation levels $n = 4, 5$ and 6 from rotational radio-frequency emission spectra". Mol. Phys., accepted 06-12-21.

171. L. Holmlid, "Precision bond lengths for Rydberg Matter clusters K_N ($N = 19, 37, 61$ and 91) in excitation levels $n = 4 - 8$ from rotational radio-frequency emission spectra". arXiv.org 06-07-23, physics/0607193. <http://www.arxiv.org/pdf/physics/0607193>

B. Research information publications

6. L. Holmlid, "Rydbergsmateria - dagbok från labbet". Forskning och Framsteg 2003, No. 4, p. 14-17.