
Arjan P. Quist, PhD.

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Detailed CV at <http://www.arjanquist.com/cv/cv.html>



Nationality: American / Dutch
Languages: English/Dutch/Swedish (Full Professional Proficiency)
German (Limited Working Proficiency)

PROFESSIONAL APPOINTMENTS

03/2006 – 04/2011 Director of Nanotechnology, Richmond Chemical Corporation
Development of Lifescience technology/nanotechnology devices

07/2003 – 02/2006 Post Graduate Researcher, Project Scientist Biophysics/Lifescience
Neuroscience Research Institute, University of California Santa Barbara.

01/2001 – 06/2003 Lecturer/Researcher, Materials Science/Biophysics
Dept. Surface Biotechnology, Uppsala University, Uppsala, Sweden

07/1999 – 12/2000 Senior Researcher, Dept. Chemical Engineering, Mälardalen University,
Eskilstuna, Sweden.

EDUCATION

2008 SBIR/STTR Grant Writing Workshop, Biotechnology Business
Consultants. Rush University Medical Center, Chicago.

07/1997 – 06/1999 Postdoctoral Research Fellow (Biophysics), Neuroscience Research
Institute, University of California Santa Barbara.

09/1992 – 06/1997 PhD (Ion Physics), Uppsala University, Uppsala, Sweden

09/1988 – 08/1992 MSc (Experimental Physics), 'Vrije' University, Amsterdam, The
Netherlands

PROFESSIONAL RESPONSIBILITIES AND AFFILIATIONS

Reviewer, peer reviewed journals: Langmuir
Scanning Microscopy
Journal of Colloid and Interface Science
Nucl. Instr. And Methods in Physics Research B

Invited Faculty Opponent for Licentiate Thesis Defense of J. Kopniczky (2003), Department of Physical Chemistry, Uppsala University.

Invited Member of local organizing committee: ICESS-9: International Conference on Electronic Spectroscopy and Structure, June 30 - July 4, 2003, Uppsala, Sweden.

Assistant Graduate Advisor for PhD candidates:

Magnus Bergkvist, Dept. Chemical Engineering, Uppsala University
PhD 2002

Greger Ledung, Dept. Chemical Engineering, Uppsala University
PhD 2003

Elisabeth Pavlovic, Dept. Surface Biotechnology, Uppsala University
PhD 2003

AWARDS AND HONORS

1992 Undergraduate exchange student scholarship, 'Vrije' University
Amsterdam and Uppsala University
1995 Graduate Liljewalchs Travel stipend, Uppsala University

CO-INVENTOR ON PATENT APPLICATIONS

"Apparatus and method of retaining and releasing biomolecules from nanostructures by an external stimulus", US2009/037005.

"Large Scale Parallel Immuno-Based Allergy Test and Device for Evanescent Field Excitation of Fluorescence". US patent application number 11/450,888.

"Screening Tool for Treatment of Neurodegenerative Disease", US patent application number 11/450,146.

"Device to Measure Physico-Chemical Properties of Fluids at Nanoscale", US patent application number 60/784,516.

"Novel artificial structures with magnetic functionality", PCT Application 0103859-5.

"Electroactivated Immobilisation", PCT Application 0103021-2.

"Method for the positioning of macromolecules and particles", Ref. No. WO 0160316.

"Method of arraying nanoparticles and macromolecules on surfaces", European Patent 98 945 729.6.

"A method for detecting and quantifying analytes by means of scanning force microscopy", Ref. No. WO 9631775.

GRANTS AND FUNDING

Biotechnology: Interactions between macromolecules and surfaces
1998-2001, Oscarsson (PI)
Swedish Knowledge Foundation (KK)
Role: Co-Investigator

Biomimetics
2000-2003, Nilsson (PI)
Swedish Foundation for Strategic Research
Role: Co-Investigator

TEACHING EXPERIENCE

- *Scanning Probe Microscopy and Applications*, short course within Ultrastructure Research (undergraduate and graduate), Uppsala University, 1995, 1996, 1997, 1999.
- *Surface analysis techniques (Probe microscopy, Ellipsometry, Surface Plasmon Resonance)*, short course within Protein/Surface Biotechnology (undergraduate chemical engineering), Mälardalen University, 1996, 1997, 2000, 2001, 2002, 2003.
- *Protein/Surface Biotechnology* (undergraduate chemical engineering), 2000.
- *Introduction to AFM*, short course within Surface Physics (undergraduate physics), Uppsala University, 2002.
- *Introduction to AFM*, short course within Surface Biotechnology (graduate surface biotechnology), Uppsala University, 2002.

OTHER (LABORATORY) SKILLS AND EXPERIENCE

Scanning Probe Microscopy (Topometrix, Park Scientific, Molecular Imaging (PicoSPM), Digital Instruments (Nanoscope, Bioscope, Dimension))
Lipid bilayers, LB, protein-membrane interaction
QCM microbalance
Mass Spectrometry (MALDI, Electrospray)
Scanning Electron Microscopy
Electron Beam Lithography (Nabity, Jeol)
ESCA (Electron Spectroscopy for Chemical Analysis, Scienta)
Microcontact Printing
Photolithography
Cleanroom Processing
Fluorescence/optical Microscopy
Biochemistry (cell culture, fluorescent labeling)
Assistant supervisor for 3 PhD candidates
Teaching surface biotechnology and surface analytical techniques

Brief description of Lifescience/Biophysics Research and significance

My research emphasized the design and implementation of biologically functional nano-devices using nano- and micro-fabrication techniques (such as probe microscopy, electronbeam- and photo-lithography, contact printing), and the use of such devices for basic research applied to biosensor- and activity-regulating components, as well as the study of several hypothesis driven projects related to biophysics of single molecules in human disease and their interaction with cell membranes and surfaces. Integrated devices with high spatial and temporal resolution, capable of simultaneous probe microscopy, fluorescence, and other techniques can show an unparalleled performance in elucidating complex biological problems.

Bio-nanotechnology, Sensors, and Regulation

Already early in the development of atomic force microscopy my research (with Prof. Sundqvist) showed the possibilities of studying single protein molecules on surfaces with this technique, resolving domain structures, as well as the use of AFM to monitor the success-rate of specific antigen antibody docking reactions. Such protein adsorption was spatially random. A logical further step is the effort to design surfaces with specific sites for binding of molecules, for which several pathways are undertaken (work initiated with Prof. Oscarsson).

Using thiolated (by silanization) silicon oxide surfaces, local active sites can be created by oxidation of thiol groups into thiolsulfonates and thiolsulfonates. Such groups are extremely reactive to free thiols that may be present (or can be purposely introduced) on the molecules which need to be covalently linked to the surface. For instance, a metalloporphyrin could, in future work, be linked to the surface using thiol spacers, in order to mimic enzyme catalyzed production of ammonia. To apply this principle to single molecule interactions, an AFM tip can be used to locally activate the surface using a potential between tip and sample. For large scale studies, this technique was expanded by applying this potential over larger structured areas using pdms stamps metalized with aluminum (electro-microcontact printing). Such stamps (functioning simultaneously as counter and reference electrode) were so far used to array thiol-rich molecules on silicon surfaces. It would be feasible to expand electro-microcontact printing to even larger scale and produces surfaces with application to chemically directed cell or axonal growth.

In order to reach a surface that can control the positioning of biomolecules, and possibly regulate activity, I set up an electronbeam lithography facility to fabricate micron size magnetic closed domain structures on surfaces. Depending on the design of such structures, biomagnetic nanoparticles (biomolecules/reagents linked to magnetic beads/nanoparticles) may be transported or trapped and released with high spatial and temporal resolution, or used to switch surface activity.

Structure and Function of Ion Channels

Protein conformational diseases, including several neurodegenerative (Alzheimer's, Huntington's, Parkinson's, familial British dementia (FBD), familial Danish dementia (FDD), systemic (type II diabetes) and other (cystic fibrosis)) diseases presumably result from protein misfolding that alters their 3D conformations from native (often soluble form) to non-native (often insoluble form) folded structures. Understanding such misfolding and the resulting 3D conformations that induce pathophysiological cellular activity and degeneration have been one of the most important and yet challenging areas of research that I participated in at UCSB in the

Neuroscience Research Institute. Earlier work showed already that ABeta(1-42) formed calcium permeable channels in vesicles . Our study has shown that several amyloid peptides, such as ABri, ABeta(1-40), ADan, A-synuclein, Serum Amyloid A, and Amylin, which are important factors in the pathogenesis of Alzheimer's disease and Parkinson's disease, and type 2 diabetes were reconstituted in lipid bilayers. We found channel-like structures for all peptides.

Gap junctions (composed of two hemichannels in apposing cells) mediate inter-cellular communication and synchronize electrical activity between neighboring cells. Malfunctions of gap junction channels have been associated with many diseases, including cancer, heart failures, and neurodegenerative diseases. With a multimodal approach, using AFM, fluorescence microscopy, and cell biology techniques, I have shown that unapposed gap junction channels in the cellular nonjunctional region modulate their activities in response to physiological fluctuations of extracellular calcium and play an important role in cell volume regulation . Integrated AFM and fluorescence microscopy is the ideal tool for such studies, as cell volume, cytoskeleton structural dynamics, cellular physicochemical, nano-mechanical properties, and intracellular biochemical changes can be monitored simultaneously.

Instrument Development

I designed and built a Petri-dish shaped TIRF (total internal reflection fluorescence) illuminator that uses LED's of different wavelength to excite fluorophores on a sample centered in the dish. This dish could be integrated with an existing AFM system and hence can combine AFM, Epi-Fluorescence, and TIRF illumination. Other design projects included a piezo electric cantilever based sensor for molecular interactions, and a system to combine surface patterning with electrochemistry using metalized PDMS stamps.

PUBLICATIONS**Peer reviewed:**

1. **Quist, A.P.**, Lal, R. "Characterization of nanoscale biological systems: Multimodal atomic force microscopy for nanoimaging, nanomechanics and biomolecular interactions", in: Nanotechnology for Biology and Medicine (Ed. G. Silva), Springer, in press.
2. Gebeshuber I.C., **Quist A.P.**, H.A. Abdel-Aal (2010) "Transdisciplinarity", in: Encyclopedia of Nanoscience and Society, (Eds. Guston D. and Golson J.G.), 1st edition (July 14, 2010), Sage Publications, CA, USA, ISBN-10: 1412969875, ISBN-13: 978-1412969871, 768-769.
3. **Quist A.P.**, Oscarsson, S. Micropatterned surfaces: techniques and applications in cell biology. **Expert Opinion in Drug Discovery** **5(6)**: 569-581, 2010 (Invited Review).
4. Lal, R., Lin, H., **Quist, A.P.** Amyloid beta ion channel: 3D structure and relevance to amyloid channel paradigm. **Biochimica et Biophysica Acta. Biomembranes** **1768(8)**: 1966-1975, 2007 (Invited Review)
5. **Quist, A. P.**, Chand, A., Ramachandran, S., Daraio, C. Jin, S. Lal, R. Atomic force microscopy imaging and electrical recording of lipid bilayers supported over microfabricated silicon chip nanopores: Lab-on-a-Chip system for lipid membranes and ion channels. **Langmuir** **23(3)**: 1375-1380, 2007.
6. **Quist A.P.**, Chand A., Ramachandran S., Cohen D., Lal R. Piezoresistive cantilever based nanoflow and viscosity sensor for microchannels. **Lab on a Chip** **6**: 1450-1454, 2006.
7. Chen I-C., Chen L-H., Orme C., **Quist A.P.**, Lal R., Jin S. Fabrication of high-aspect-ratio carbon nanocone probes by electron beam induced deposition patterning. **Nanotechnology** **17**: 4322-4326, 2006.
8. Ramachan S., **Quist A.P.**, Kumar S., Lal R. Cisplatin nanoliposomes for cancer therapy: AFM and fluorescence imaging of cisplatin encapsulation, stability, cellular uptake and toxicity. **Langmuir** **22**: 8156-8162, 2006.
9. Chen I-C., Chen L-H., Ye X.R., Daraio C., Jin S., **Quist A.P.**, Lal R. Extremely sharp carbon nanocone probes for atomic force microscopy imaging. **Applied Physics Letters** **88**: 153102-3, 2006.
10. **Quist A.P.**, Doudevski, I., Lin, H., Ng, D., Frangione, B., Ghiso, J., Lal, R. Amyloids form membrane pores: a common structural substrate for protein-misfolding disease. **Proceedings of the National Academy of Sciences** **102**: 10427-10432, 2005.
11. **Quist A.P.**, Pavlovic E., Oscarsson S. Recent advances in microcontact printing. **Analytical and Bioanalytical Chemistry** **381**: 591-600, 2005. (Invited Review)
12. Felton S., Gunnarsson K., Roy P. E., Svedlindh P., **Quist A.** MFM imaging of micron-sized permalloy ellipses. **Journal of Magnetism and Magnetic Materials** **280**: 202-207, 2004.
13. Pavlovic E., Oscarsson S., **Quist A.P.** Nanoscale site-specific immobilization of proteins through electroactivated disulfide exchange. **Nano Letters** **3**: 779-781, 2003.
14. Pavlovic E., **Quist A.P.**, Nyholm L., Pallin A., Gelius U., Oscarsson S. Patterned generation of reactive thiolsulfonates/thiolsulfonates on silicon oxide by electrooxidation using electro-microcontact printing. **Langmuir** **19**: 10267-10270, 2003.

15. Pavlovic E., **Quist A.P.**, Gelius U., Nyholm L., Oscarsson S. Generation of thiosulfonates/thiolsulfonates by electrooxidation of thiols on silicon surfaces for reversible immobilization of molecules. **Langmuir** **19**: 4217-4221, 2003.
16. Pavlovic E., **Quist A.P.**, Gelius U., Oscarsson S. Surface functionalization of silicon oxide at room temperature and atmospheric pressure. **Journal of Colloid and Interface Science** **254**: 200-203, 2002.
17. Baranov I., Hakansson P., Kirillov S., Kopniczky, J., Novikov, A., Obnorskii, V., Pchelintsev, A., **Quist, A. P.**, Torzo, G., Yarmiychuk, S., Zennaro, L. Desorption of nanoclusters (2-40 nm) from nanodispersed metal and semiconductor layers by swift heavy ions. **Nuclear Instruments & Methods in Physics Research B193**: 798-803, 2002.
18. Ledung G., Bergkvist M., **Quist A.P.**, Gelius U., Carlsson J. and Oscarsson S. A novel method for preparation of disulfides on silicon. **Langmuir** **17**: 6056-6058, 2001. **(corresponding author)**
19. **Quist A.P.**, Rhee S. K., Lin H., Lal R.. Physiological role of gap-junctional hemichannels: extracellular calcium-dependent isosmotic volume regulation. **Journal of Cell Biology** **148(5)**: 1063-1074, 2000.
20. Reimann C.T., Sullivan P.A., Axelsson J., **Quist A.P.**, Altmann S., Roepstorff P., Velazquez I., Tapia O.. Conformation of highly-charged gas-phase lysozyme revealed by energetic surface imprinting. **Journal of the American Chemical Society** **120**: 7608-7616, 1998.
21. Rhee S.K., **Quist A.P.**, Lal R. Amyloid beta protein (1-42) forms calcium permeable, Zn²⁺ sensitive channel. **Journal of Biological Chemistry** **273(22)**: 13379-13382, 1998. **(one of two primary authors)**
22. **Quist A.P.**, Petersson Å., Reimann C.T., Bergman A.A., Daya D.D.N.B., Hallén A., Carlsson J., Oscarsson S.O., Sundqvist B.U.R. Site-selective molecular adsorption at nanometer-scale mev-atomic-ion-induced surface defects. **Journal of Colloid and Interface Science** **189**: 184-187, 1997.
23. Sullivan P.A., Axelsson J., Altmann S., **Quist A.P.**, Sundqvist B.U.R., Reimann C.T. Defect formation on surfaces bombarded by energetic multiply-charged proteins: implications for the conformation of gas-phase electrosprayed ions. **Journal of the American Society for Mass Spectrometry** **74**: 329-341, 1996.
24. **Quist A.P.**, Bergman A.A., Reimann C.T., Oscarsson S.O., Sundqvist B.U.R. Imaging of single antigens, antibodies, and specific immunocomplex formation by scanning force microscopy. **Scanning Microscopy** **9**: 395-400, 1995.
25. **Quist A.P.**, Björck L.P., Reimann C.T., Oscarsson S.O., Sundqvist B.U.R. A scanning force microscopy study of human serum albumin and porcine pancreas trypsin adsorption on mica surfaces. **Surface Science** **325**: L406-L412, 1995.
26. Reimann C.T., Sullivan P.A., Tuerpitz A., Altmann S., **Quist A.P.**, Bergman A., Oscarsson S.O., Sundqvist B.U.R., Håkansson P. keV-Polyatomic-ion-impact-nucleated oxidative etch pitting in highly-oriented pyrolytic graphite. **Surface Science** **341**: L1019-L1024, 1995.
27. **Quist A.P.**, Ahlbom J., Reimann C.T., Sundqvist B.U.R. Scanning force microscopy studies of surface defects induced by incident energetic macromolecular ions. **Nuclear Instruments and Methods in Physics Research B88**: 164-169, 1994.
28. Reimann C.T., **Quist A.P.**, Kopniczky J., Sundqvist B.U.R., Erlandsson R. and Tengvall P. Impacts of polyatomic ions on surfaces: conformation and degree of fragmentation of

molecular ions determined by lateral dimensions of impact features. **Nuclear Instruments and Methods in Physics Research B88**: 29-34, 1994.

29. **Quist A.P.**, Huth-Fehre T., Sundqvist B.U.R. Total yield measurements in matrix assisted laser desorption using a quartz crystal microbalance. **Rapid Communications in Mass Spectrometry 8**: 149-154, 1994.

Peer-reviewed Conference Proceedings:

1. Oscarsson, S., Pavlovic, E., **Quist, A.**, Nyholm, L., Pallin, A. and Gelius, U. Electrochemical Microcontact Printing of Thiolated Silicon Surfaces by Generation of Reactive Thiolsulfonates/Sulfonates. **Proceedings of the 7th World Biomaterials Congress**, Sydney, May 17-21, 2004
2. **Quist A.P.**, Pavlovic E., and Oscarsson S. Surface Nanobiotechnology I: Methods and Techniques for Activation of Surfaces and Specific Immobilization of Macromolecules. **Proceedings of the International School on Advanced Material Science and Technology**, Jesi (Ancona), Italy, 2 - 6 September 2002.
3. **Quist A.P.**, Bergkvist M., and Oscarsson S. Surface Nanobiotechnology II: Orientation and Conformation of Macromolecules using Scanning Probe microscopy. **Proceedings of the International School on Advanced Material Science and Technology**, Jesi (Ancona), Italy, 2 - 6 September 2002.
4. **Quist A.P.**, Oscarsson S. Surface Modifications of Biomaterials. **Proceedings of the International School on Advanced Material Science and Technology**, Jesi (Ancona), Italy, 27 - 31 September 2001.
5. Ledung G., Bergkvist M., **Quist A.P.**, Gelius U., Oscarsson S. A Novel Method for preparation of Highly Reactive Disulphides on Silicon. **Proc. 8th Ann. Int. Conf. on Composite Engineering**, Tenerife, Spain August 5-11, 2001.
6. Huth-Fehre T., **Quist A.P.**, Linder S-O., Sundqvist B.U.R. Development of a simple and highly sensitive microbalance for measurements of total particle yield in matrix assisted laser desorption. **Materials Research Society Symposium Proceedings 285** (1993) 181-186.

Other (non peer-reviewed) Publications:

1. Quist A.P. Probing Biomolecular Structure with Scanning Force Microscopy. **Acta Univ. Ups., comprehensive summaries of Uppsala Dissertations from the Faculty of Science and Technology 270**: 36pp, Uppsala, ISBN 91-554-3944-6. **(PhD thesis, 1997)**
2. **Quist A.P.**, Bergman A.A., Reimann C.T., Oscarsson S.O., Sundqvist B.U.R. Direct measurement of immunocomplex formation by atomic force microscopy. **Application Note, Digital Instruments Inc.**, Santa Barbara CA, USA (1996)
3. **Quist A.P.**, Bergman A.A., Reimann C.T., Oscarsson S.O. and Sundqvist B.U.R. Direct measurement of immunocomplex formation by atomic force microscopy. **Biomedical Products, Tools and Techniques** (December 1996) 8.

PRESENTATIONS

Invited Talks:

1. **Quist A.P.** Advances and current technology in Nanomedicine. The Ångström Laboratory seminar series, Uppsala University, Uppsala, Sweden, 2009
2. **Quist A.P.** Nanotechnology: Applications in Life Sciences and Medicine. *10th Meeting in Physics, the Nanoscience Revolution*, Quito, Ecuador, 2007.
3. **Quist A.P.**, Lin H., Thimm J., Mechler A., Doudevski I., and Lal R. AFM imaging of 3D conformations and surface energetics of reconstituted ion channels: Mimicking lipid bilayer cell membrane. *Microscopy and Microanalysis 2005*, Honolulu HI, 2005.
4. **Quist A.P.**, Rhee S., Lin H. and Lal R. Combining Atomic Force and Fluorescence Microscopy to study cell volume regulation through non-junctional hemichannels. *4th Linz Winter Workshop on Single Molecule Techniques in Biophysics and Drug Discovery*, Linz, Austria, 2002.
5. **Quist A.P.**, Lal R. Porous vycor glass as a model system for biodevices: an AFM study of properties of water in confined geometries. *Microscopy and Microanalysis 2001*, Long Beach CA, 2001.
6. **Quist A.P.** Atomic force microscopy as a tool in Neuroscience: Studies of Hemi-channels and Amyloid Beta Channels. *Center for Surface Biotechnology*, Uppsala, Sweden, 2000.
7. **Quist A.P.** Probing biomolecular structure with scanning force microscopy using soft adsorption and energetic impacts. *Desorption 96*, Rønne (Bornholm), Denmark, 1996
8. **Quist A.P.**, Bergman A.A., Reimann C.T., Oscarsson S.O., Sundqvist B.U.R. Antibody-antigen docking observed with tapping mode scanning force microscopy in air and liquids. *Fourteenth Pfefferkorn conference on the science of biological specimen preparation for microscopy*, Belleville IL, 1995

Contributed Talks:

1. Pavlovic E., **Quist A.P.**, and Oscarsson S. Electrooxidation of thiols on silicon surfaces for reversible immobilization of molecules. *225th ACS National Meeting*, 2003, New Orleans LA.
2. Almqvist N., **Quist A.P.**, and Lal R. Elastic properties of living cells studied by multimodal atomic force microscopy. *Nordic-Baltic SPM Workshop 2000*, Marstrand, Sweden,
3. Lin H., Zhu Y.J., **Quist A.P.** and Lal R. Amyloid Beta Protein (1-40) reconstituted in lipid vesicles forms calcium-permeable channels. *43rd annual meeting of the Biophysical Society*, Baltimore MD, 1999.
4. Rhee S.K., **Quist A.P.**, Lal R. Imaging of gap junction hemi-channel-mediated cytoplasmic dye-uptake of single Marshall cells by combined atomic force and fluorescence microscopy. *42nd annual meeting of the Biophysical Society*, Kansas City MI, 1998.
5. Daya D.D.N.B. , Reimann C.T. , Hallén A. , Petersson Å. , **Quist A.P.** , Håkansson P., Sundqvist B.U.R. , Brunelle A., Della-Negra S. and LeBeyec Y. A scanning force microscopy study of surface and sub-surface tracks on mica due to fast ¹²⁷I atomic and C₆₀ cluster ions. *Eighteenth International Conference on Nuclear Tracks in Solids*, Cairo, Egypt, 1996.

6. Sullivan P.A. , Reimann C.T. , Axelsson J. , Quist A.P. , Håkansson P. , Roepstorff P., Sundqvist B.U.R. Conformation of gas-phase lysozyme ions as revealed by surface-impact defects. *American Society of Mass Spectrometry Meeting*, Portland, OR, 1996.
7. Bergman A.A., **Quist A.P.**, Reimann C.T., Oscarsson S.O. and Sundqvist B.U.R. Antibody-antigen docking observed with tapping mode scanning force microscopy in air. *Scanning Microscopy 96*, Bethesda MD, 1996
8. Sullivan P.A. , Reimann C.T. , Axelsson J. , **Quist A.P.** , Håkansson P., Sundqvist B.U.R. Light emission and surface defects induced by energetic macromolecular surface collisions. *European Materials Research Society Conference*, Strasbourg, France, 1995.
9. Bergman, A. Marelius J. , Håkansson P. , **Quist A.P.** , Reimann C.T. , Oscarsson S., Sundqvist B.U.R. Preferential adsorption at graphite etch-pit edges. *Micronics Meeting*, Vår Gård, Stockholm, Sweden, 1995.
10. **Quist A.P.**, Bergman A.A., Reimann C.T., Oscarsson S.O., Sundqvist B.U.R. Antibody-antigen docking observed by scanning force microscopy. *Scanning Microscopy 95*, Houston TX, 1995.
11. **Quist A.P.**, Bergman A.A., Reimann C.T., Oscarsson S.O., Sundqvist B.U.R. Antibody-antigen docking observed by scanning force microscopy. *Micronics meeting*, Saltsjöbaden, Sweden, 1995.
12. **Quist A.P.**, Reimann C.T., Sundqvist B.U.R. Scanning probe microscopy studies of defects induced by macromolecular ion impacts on different surfaces. *Microprobe symposium*, Vadstena, Sweden, 1994.
13. Reimann C.T. , **Quist A.P.** , Kopniczky J. , Håkansson P., Sundqvist B.U.R. Nano-scale topological surface features induced by incident energetic ions. *Micronics Meeting*, Rimforså, Sweden, 1994 .
14. Quist A.P., Reimann C.T., Sundqvist B.U.R. SPM studies of surface defects induced by macromolecular ions. Topometrix Workshop: "New developments in Scanning Probe Microscopy", Uppsala, Sweden, 1993
15. Reimann C.T., **Quist A.P.**, Kopniczky J., Sundqvist B.U.R., Erlandsson R. and Tengvall P. Impacts of polyatomic ions on surfaces: conformation and degree of fragmentation of molecular ions determined by lateral dimensions of impact features. *Poly-atomic ion impact on solids and related phenomena*, Saint-Malo, France, 1993.
16. Reimann C.T. , Axelsson J. , **Quist A.P.** , Zubarev R.A. , Demirev P., Tengvall P., Erlandsson R., Sundqvist B.U.R. Recent experiments at Uppsala university on macromolecular ion impacts on surfaces. *Particle-induced desorption mass spectrometry*, Hirschegg, Austria, 1993.
17. Reimann C.T. , **Quist A.P.** , Kopniczky J., Ahlbom J. , Tengvall P. , Erlandsson R. Sundqvist B.U.R. Atomic force microscopy studies of craters induced in surfaces by macromolecular ion impacts. *Polyatomic Ion Impacts on Solids and Related Phenomena*, St. Malo, France, 1993.