

John E.E. Baglin

IBM Almaden Research Center
650 Harry Road, K10/D1
San Jose, CA 95120, USA

Tel. (408) 927-2280
email: baglin@almaden.ibm.com

Summary

JOHN BAGLIN is an Emeritus Research Staff Member at the IBM Almaden Research Center, San Jose, California, USA. He received B.Sc., M.Sc. and Ph.D. degrees in Physics from the University of Melbourne, Australia, in 1957, 1959 and 1963 respectively. He subsequently taught at Iowa State University / Ames Laboratory, and at Yale University, before joining IBM in 1972. He conducted research in thin film interactions, radiation effects in solids and ion beam analysis at the IBM Watson Research Center, Yorktown Heights, NY, and in 1988 he moved to IBM-Almaden to establish new programs there in ion beam analysis and materials physics. He is currently investigating nanoscale-resolution ion beam patterning and lithography, (with special focus on device fabrication and magnetic storage applications), and exploring the physics of ion beam hardening of polymers to form diamondlike carbon protective coatings. Dr. Baglin is the author/editor of 30 book chapters/books in these topics, and approximately 200 publications, and 20 patents. He is a Fellow of the American Physical Society, a former President of the Materials Research Society, Secretary (and former Vice President) of the International Union of Materials Research Societies and Chair of the IUMRS Membership Commission, Vice-President of the Materials Education Council, and Editor-in-Chief of the Journal of Materials Education, and he serves on the Editorial Board of Applied Physics Reviews.



PROFESSIONAL RESUME

JOHN EDWARD ERIC BAGLIN

November, 2009.

	PAGE
Vitae	3
Academic Background	3
Professional Appointments	3
Awards	3
Experience	4
Research Topics	4
Teaching and Education	5
Management	6
Professional Society/Materials Community Activities	7
Editorial Appointments	10
Patent Activities	10
Publications	12
Books and Book Chapters	12
Refereed Journal Articles	13

CURRICULUM VITAE

JOHN EDWARD ERIC BAGLIN

IBM Almaden Research Center
650 Harry Road, K10/D1
San Jose, CA 95120-6099, USA.
Tel. (408) 927-2280
E-mail: baglin@almaden.ibm.com
john.baglin@gmail.com

17995 Barnard Road
Morgan Hill
CA 95037, USA.
(408) 779-4796
baglin@svinet.com

Vital Statistics

Date of Birth: 22 October, 1936.
Citizenship: Australian

Place of birth: Melbourne, Australia
Residence: USA (Green Card)

Academic Background

B.Sc. (Physics) University of Melbourne	1957
M.Sc. (Physics) University of Melbourne	1959 (Kernot Prize)
Ph.D.(Physics) University of Melbourne	1963/4.

Professional Appointments

2002-	Research Staff Member Emeritus, IBM Almaden Research Center
2002-07	Visiting Associate, Materials Research Institute, Northwestern University, IL.
1988-94	Manager, Materials Characterization IBM Almaden Research Center, San Jose, CA.
1987-2002	Research Staff Member, IBM Almaden Research Center.
1972-87	Research Staff Member, IBM Thomas J. Watson Research Center, Yorktown Heights, NY.
1970-72	Assistant Professor (Physics), Iowa State University, Ames, IA, and Associate Physicist, Ames Laboratory, USAEC.
1965-70	Research Associate, Yale University, New Haven, CT.
1963-65	Assistant Professor (Physics), Iowa State University, Ames, IA, and Associate Physicist, Ames Laboratory, USAEC.
1957-63	Instructor (Physics), University of Melbourne.

Awards

2001	IBM Invention Achievement Award, for Method and Apparatus for Linking and/or Patterning Self-Assembled Objects.
1999	IBM Research Division Award, for development of GMR head technology
1999	IBM Invention Achievement Award
1992	Fellow, American Physical Society
1994	Woody Award, Materials Research Society, for outstanding service and dedication.
1988	IBM Outstanding Technical Achievement Award, for research into growth kinetics of metal silicides.
1985	IBM Invention Achievement Award

1982	IBM Outstanding Technical Achievement Award, for research in low-level radiation monitoring of product components.
1979	IBM Research Division Award, for research on oxidation of refractory metal silicides.
1985-92	IBM External Honor Awards
1963	Fulbright Scholar

E X P E R I E N C E

RESEARCH TOPICS

Ion Beam Modification of Materials

- Fundamental interactions; ion beam mixing; ion beam assisted deposition; ion enhanced adhesion for metal/polymer, metal/glass interfaces; ion implantation in magnetic thin films for high density storage media; order/disorder transitions; shallow dopants in silicon; implant compaction of silica; ion beam modification of polymers; diamond-like carbon coatings; corrosion resistant coatings; ion beam lithography at the nanometer scale; self-assembly of nanostructures; TRIM simulations; implant enhanced dielectric breakdown strength (Patent); pulsed ion beam annealing of silicon;.
- Many invited talks; 16 books / book chapters; organized many conferences; taught short courses.

Ion Beam Analysis

- Rutherford Backscattering Spectrometry (RBS); PIXE; channelling; nuclear reaction analysis; elastic recoil scattering (ERD) for H and D profiling.
- Absolute standard differential cross section determinations for ERD on H and D; also for RBS; international source of standard reference samples for ERD, RBS; stopping power determinations and Bragg's rule.
- ¹⁰B dopant profiling in silicon using neutron induced reactions
- Nuclear Resonance Analysis for boron, carbon, oxygen in trace quantities
- Radiotracer analysis of thin film reactions
- PIXE optimized for thin magnetic films
- 3 tutorial book chapters; many short courses (NATO-ASI Institutes; IBM internal; professional groups)
- Managed/operated IBM Divisional ion beam analytical services and externally contracted service.

Thin Films and Interfaces

- Intermetallic thin film diffusion; applications to device packaging and chip metallization; metal silicide growth kinetics, thermodynamics, nucleation, phase stability; oxidation of silicides; thermal stability of magnetic multilayer structures and GMR sensors (storage technologies); catalytic surface interactions; polymer/polymer diffusion; pulsed laser annealing of Si and GaAs; ion assisted desorption of H on silicon.
- Corrosion resistant coatings (Si-DLC).
- Tribological coatings.
- Thin film adhesion phenomena; delamination; adhesion testing; adhesion enhancement; interface layers; thermal stability, ion assisted adhesion.
- Characterization techniques: RBS, ERD, PIXE, NRA, AFM, XPS, AES, XRD, SEM, TEM.
- Many invited talks; 11 books / book chapters; short courses; Several IBM Awards.

Nuclear Physics

- Photoneuclear giant dipole resonance; (σ ,n), (σ ,xn), (σ ,p) and (σ , σ') cross sections and angular distributions, 5-60 MeV; hydrodynamic models for heavy deformed nuclei; resonance splitting; complex structure for photodisintegration of ^9Be , ^{12}C , ^{16}O , ^{24}Mg , ^{27}Al , ^{32}S , ^{40}Ca ; single-particle and Nilsson modelling.
- Techniques and equipment: proton spectrometry; thermal neutron detection; activation counting; detectors of every kind. Radiation sources: electron synchrotrons, betatrons, TW/CW electron linacs; electrostatic accelerators.
- Low level radiation detection (for screening contaminated Si chips (IBM Award)).
- Absolute differential cross section determination for $^1\text{H}(^4\text{He}, ^1\text{H})^4\text{He}$ and $^2\text{H}(^4\text{He}, ^2\text{H})^4\text{He}$, (1-3 MeV).

TEACHING AND EDUCATION

Iowa State University 1963-65; 1970-72. Assistant Professor (Physics)

- Nuclear Physics - Graduate Seminar series
- Graduate Qualifier Exam Committees
- Graduate Admissions Committee
- Graduate research supervisor (Nuclear Physics)
- Ph.D. Thesis Examiner
- Physics and Engineering majors (Resnick/Halliday courses)
- Physics Introductory (non-majors); class of 700; lectures, recitations, labs.
- Major renovation and restructuring of undergraduate lab. courses
- Initiated ISU on-line access to the Univ. of Illinois PLATO project that pioneered Computer Assisted Instruction (1971)
- Initiated collaborative graduate research projects at Los Alamos Nat. Lab.
- Initiated Major Facility proposal to DOE for 30 MeV electron linac at ISU.

Yale University 1965-70 Research Associate (Physics)

- Graduate research direction (Nuclear Physics)
- Graduate Qualifier Exam Committees
- Ph.D. Thesis Examiner
- Initiated joint projects in ion implantation and silicon characterization with IBM Research and Brookhaven National Lab.

University of Melbourne 1957-63 Instructor (Physics)

- Taught undergraduate labs. at all levels

IBM Research Division 1972-2002 Research Staff Member / Manager

- Professional Education Series of short courses (in-house).
Taught formal classes in Surface Analytical Techniques.

NATO Advanced Study Institutes

- Lecturer on Materials Characterization. (New York, 1982; Portugal, 1987)
- Lecturer on Interface Engineering. (Gers, France, 1994)

State University of New York

- Short Course on "Fundamentals of Adhesion" (1990, 1991, 1993, 1994, 1995)

Academic Advisory Review Committees / Consultancies

- Washington Technology Center (U. of Washington and Washington State Univ.): Review of graduate research programs and funding issues (1991)
- Iowa State University - Dept. of Physics: Ongoing review of graduate and undergraduate curricula and graduate research agenda (1992-)
- University of North Texas, Denton, TX: Materials Science curriculum review (1993)
- Univ. of Buenos Aires, Argentina: Materials Physics curriculum review (1993)
- University of Lund, Sweden: Ph.D. thesis examiner and "Opponent" (1994)
- Northwestern University – Materials Research Center strategic planning (2003 -)
- University of Louisiana at Lafayette - Louisiana Accelerator Center (2007)
- Alabama NSF-EPSCOR Program (2007)

Materials Research Society

- Short Course planning and oversight responsibility (1986-7).
(Approx. 30 courses in Materials organized at major MRS Meetings, and by contract on-site for large corporations).
- Awards Committee Chair (1989, 1990, 1993-6)
 - Graduate Student Awards director
 - Outstanding Young Investigator Award established in 1990
- Organizer, Symposia on Materials Education (1995, 1996, 1997, 1998, 1999).
- Moderator, Forum on Materials Education, MRS-Singapore (2001).
- Organizer, International Materials Education Forum, IUMRS-ICAM, Singapore (2005)
- Organizer, Symposium on Materials Education, E-MRS, Nice (2006)
- Organizer, Symposium on Ion Beam Based Nanofabrication. (2007)
- Organizer, Symposium on Materials Education, IUMRS-ICEM, Australia (2008)
- Organizer, Symposium on Ion Beam Based Nanofabrication. (2009)
- Organizer, Symposium on Materials Education, ICMAT Singapore (2009)
- Organizer, Symposium on Materials Education, ICAM Rio de Janeiro (2009)

International Council on Materials Education

Vice Pres. / Councillor, 1989-

ICME publishes "Journal of Materials Education"; plans and assists preparation of teaching materials designed to support university materials programs at the graduate and undergraduate levels; coordinates series of video modules in MSE; and works with the professional societies to present the case for government and industrial support of educational programs.

IBM-University Relations

- CalTech - Division of Applied Physics: Joint studies involving grad. students directed by Prof. H. Atwater (1991, 1993-4)
- San Jose State University - Dept. of Materials Science & Eng.: Joint studies involving graduate programs in low energy ion implantation (1989-2002)
- San Jose State University: Managing NSF-supported summer internship program at IBM (1994-8)

MANAGEMENT

IBM - Almaden Research Center

Manager, Materials Characterization Dept. 1988-94

This department of 11 people (i) provided lab-wide film / surface characterization services and consulting, including RBS/ERD, AES, XPS, SIMS, SEM, HRTEM; (ii) conducted

independent research on thin film interactions and interface phenomena (e.g. thermal stability of intermetallic interfaces used in MR head structures; formation of implanted buried layers (SIMOX); self-ordering in diblock copolymer films; hydrogen passivation of single crystal silicon surfaces); (iii) undertook development of special thin-film materials, e.g. granular giant-magnetoresistive films (for high density data storage); metal coatings on ceramics by ion assisted deposition (chip packaging)).

Materials Research Society

Extensive organizational responsibilities over many years, including:

MRS President (1988); Vice President (1986-7); Councillor (1986-92);

Fall Meeting Organizer (1985);

Committee Chairmanships. Some notable achievements of Dr. Baglin's Committees were:

The initiative to publish the Journal of Materials Research;

The initiative to publish the MRS Symposium Proceedings Series.

The initiatives to establish the MRS Medal award, the Turnbull Lectureship, the Outstanding Young Investigator Award, and an Awards Endowment Fund.

"MRS-2000", a detailed 10-year Plan for every aspect of MRS growth.

"MRSNET and Electronic Publishing" – a Task Force Report that began the MRS path to online publication

Establishment of periodic online Member Surveys, for tracking key trends, and exploring new issues and opportunities for MRS.

Establishment of MRS Fellow program (2007-9).

Dr. Baglin's term as President (1988) saw a growth and maturation of the Society: membership increased by 20%; attendance at meetings rose rapidly; the Society concluded a record hotel contract for meetings 15 years into the future; the annual budget topped \$3 million, and a comprehensive benefits plan was negotiated for the growing Headquarters staff.

Professional Society Memberships

American Physical Society (Fellow)

Division of Materials Physics

Division of Nuclear Physics

Forum on Industrial and Applied Physics

Forum on Education

Materials Research Society (President, 1988).

Sigma Xi (Scientific Honor Society)

The Metallurgical Society (AIME)

ASM International

Committee on Education (2002 -)

SPIE

The Electrochemical Society (1977-80)

The Materials Research Society of India (Honorary Founding Member)

The Materials Research Society of Singapore

The European Materials Research Society

The Boehmische Physical Society (Honor Society in Ion Beam Research), Councillor.

PROFESSIONAL SOCIETY / MATERIALS COMMUNITY ACTIVITIES

American Physical Society:

Member 1963-90

Fellow 1991-

Organizer for Focussed Sessions on "Adhesion of Thin Films",
APS March Meeting, 1987, 1989, 1991, 1993.

Editorial Board, "Applied Physics Reviews", 2001-2004, 2005-2010.

Materials Research Society:

Member 1979-

Officer 1986-89

President 1988

Councillor, 1990-93

Long Range Planning Committee (Chair 1989-91), 1992-94

Task Force on MRSNET and Electronic Publishing (Chair, 1992)

Awards Committee (Chair 1989, 1993-5), 1989-

Nominating Committee (Chair 1989), 1991

Continuing Education Committee 1987

Publications Committee (Chair 1984), 1983, 1995-2000

External Affairs Committee 1988-2002

Membership Committee (Chair 1998 – 2000), 2001-

Program Committee 1984-86

Inter-Society Interactions Committee 2008 -

Web Advisory Committee 2007 -

Organizer, Technical Program for MRS Fall 1985 Meeting.

Symposium Organizer and Proceedings Editor for:

"Thin Films and Interfaces" 1983,

"Adhesion in Solids" 1988

"Ion Beam Based Nanofabrication" 2007

"Ion Beams and Nano-Engineering" 2009

Organizer, Forum on Electronic Publishing Initiatives, 1995

Organizer, Symposium on Materials Education, 1995, 1996, 1997, 1998, 1999, 2005

International Relations Committee 2005-

Web Services Advisory Committee 2005-

Organizer, Symposium on Ion Beam Based Nanofabrication, 2007, 2009

MRS Fellow Selection Committee (Chair 2007 -)

ASM International

Education Committee 2006-

The Metallurgical Society (AIME):

Organizer for topical conference on "Semiconductor Based
Heterostructures" 1986

The Electrochemical Society:

Organizer, Symposium on "Scanning Tunnelling Microscopy" 1991

Organizer for Symposia on "Thin Film Phenomena" 1977 and 1979

Proceedings editor for these symposia.

International Council on Materials Education:

Councillor 1989-94

Vice-President 1995-

Editor-in-Chief, Journal of Materials Education.

International Union of Materials Research Societies:

Chair, Commission on Membership Affairs 1998-

Vice President 2004-5

Executive Editor, IUMRS Facets, a Policy Newsletter, 2004-2007

Liaison Officer IUMRS-ICSU 2005-

Secretary, 2007-8

Organizer, Symposium on Materials Education, IUMRS/E-MRS, Nice (2006)

Organizer, Symposium on Materials Education, IUMRS/ICAM, Singapore (2005)

Organizer, Symposium on Materials Education, IUMRS/ICEM, Australia (2008)

Organizer, Symposium on Materials Education, IUMRS/ICA, Singapore (2009)

Organizer, Symposium on Materials Education, IUMRS/ICEM, Brazil (2009)

Service:

NSF Division of Materials Research: Consultative Panel: *“Frontiers of Materials Research, Technology and Education – A Workshop to Advance Pan American Collaboration”*, Rio de Janeiro, Brazil, June 1998.

NSF Division of Materials Research: Review Panel on *“Integration of Education and Research”*, Washington, DC, May, 1999.

12th Int. Conf. on Ion Beam Modification of Materials, (Program Committee), Porto Alegre, Brazil, September 4-9, 2000.

Gordon Conference on Materials Education, (Program Committee), Plymouth, NH, July, 1998.

Northwestern University (Materials Research Center): Advisory review of internal MRSEC Proposals for NSF, (1999). Research Strategy advisor, (2003) .

Symposium on Materials Education, Int. Conf. on Materials for Advanced Technologies, Singapore, July 1-6, 2001. (Organizer).

National Educators' Workshop: Update 2002: San Jose, CA, October, 2002. (Organizing Committee).

"IUMRS Facets" - Quarterly Newsletter on International Materials Policy. (Executive Editor 2004-7).

Symposium and Forum on Materials Education, 9th IUMRS Int. Conf. on Advanced Materials, and Int. Conf. on Materials for Advanced Technologies, Singapore, July 3-8, 2005. (Organizer).

14th Int. Conf. on Surface Modification of Materials by Ion Beams, Izmir, 2005. (Organizer and Proceedings Editor, Elsevier).

Symposium on Materials Education, European MRS Meeting, Nice, May, 2006. (Organizer).

Symposium on “Ion Beam Based Nano-Fabrication”, MRS Meeting, San Francisco, April, 2007 (CoOrganizer).

15th Int. Conf. on Surface Modification of Materials by Ion Beams, Mumbai, 2007. (Proceedings Editor, Elsevier).

Symposium on Materials Education, IUMRS-ICEM Meeting, MRS-Australia, Sydney, 28 July – 1 August, 2008. (Organizer).

Int. Conf. on Applications of Accelerators in Research and Industry, Fort Worth, TX, Aug. 10-15, 2008. (Topic Organizer and Proceedings Editor, NIM-B).

Huntsville Ion Beam Institute, "Grand Challenges in Ion Beam Research", Alabama A&M University, August 17-19, 2008. (Organizer and Moderator).

Huntsville Ion Beam Institute, "Current and Future Challenges in Science and Technology", Alabama A&M University, July 12-15, 2009. (Organizer and Moderator).

Academic Review:

Member, Materials Engineering Industrial Advisory Board,
San Jose State University, 1995-2000
Chair, Program Review Panel, Materials Sciences Program,
U.S. Department of Energy, Bethesda, MD, 1993
National Research Council - Workshop on Materials and Processes
Research and the Information Highway, Stanford Univ., April 1993
Reviewer, Materials Science Curriculum proposals for
Univ. of North Texas, Denton, TX, 1993
Univ. of Buenos Aires, Argentina, 1993
Advisory Council on Physics and Astronomy, Iowa State University,
Ames, IA, 1992- (Chair, 2000-2)
Advisory Committee for Washington Technology Center, U. of Wash.,
Seattle, 1990-1992
Program Review Committee, Lawrence Livermore Nat. Lab., 1989.
Frequent reviewer of research proposals for NSF and Australian Research Council.
Ph.D. Thesis Examiner, Dept. of Physics, University of Lund, 1994.
M.S. Thesis Advisor and Examiner, Dept. of Mat. Eng., San Jose State Univ., 1992-
Univ. of Louisiana at Lafayette - Accelerator Center Program Review, 2007.
Alabama EPSCoR Program review, 2008

Editorial Appointments:

Surface Coatings and Technology:

Editor, Surface Coatings and Technology, Vol. **201** (21-22) 2007, Proceedings of
SMMIB-14 Conference, Izmir, 2005.
Editor, Surface Coatings and Technology, Vol. **203** (17-18) 2009, Proceedings of
SMMIB-15 Conference, Mumbai, 2007.

Applied Physics Reviews:

Editorial Board 2001-4, 2005-7, 2008 -

Facets (Policy Newsletter published by the International Union of Materials Research Societies):

Executive Editor 2004-2007

Journal of Materials Education:

Editor-in-Chief 1996 -

Int. Journal of Microelectronic Packaging Materials and Technology:
Editorial Board 1995-2001

Journal of Adhesion Science and Technology:
Editorial Advisory Board 1989-95

Materials Letters (Elsevier):
Associate Editorial Board 1985-88

Radiation Effects:
Principal Editor, North America. [Declined].

PATENT ACTIVITIES

J.E.E. Baglin, T. diStefano and K.N.Tu (1976), *Method for improving dielectric breakdown strength of glassy materials in thin film form.* (Patent obtained.)

J.E.E. Baglin and W.N. Hammer, *Substrate heating technique for producing local, controlled, uniform high temperature, using low power density,* IBM Technical Disclosure Bulletin **18**, 2383 (1975)

J.E.E. Baglin, B.L. Crowder, W.N. Hammer and S. Zirinsky, *Fabrication of conductive refractory silicide doped polysilicon lines,* IBM Technical Disclosure Bulletin **20**, 4189 (1978)

J.E.E. Baglin, R. Feder, I. Haller, W. Hammer and E. Spiller (1979), *Graded index anti-glare surface on plastic materials, produced by ion implantation.* (Patent obtained).

J.E.E. Baglin and W.P. Dumke, *High performance bipolar transistor with a Ge epi base,* IBM Technical Disclosure Bulletin **24**, 4527 (1981)

J.E.E. Baglin, G.J. Clark and C.C. Tsuei, *Low temperature process for forming superconducting Nb₃Si,* IBM Technical Disclosure Bulletin **28**, 2701 (1985)

J.E.E. Baglin, T.B. Bowmaster, O.C. deHodgins, M.S. Pittler and T.R. Vance, *Improving mechanical adhesion properties of polyimide-silicon-metal junction,* IBM Technical Disclosure Bulletin, (1990).

J.E.E. Baglin, N.J. Chou and D.W. Dong, *Method of producing graded refractive index surfaces in SiO₂ and SiO,* IBM Technical Disclosure Bulletin **33**, no.3B (1990)

J.E.E. Baglin and P. Madakson, *Interface toughening by ion implantation for enhancement of thin film adhesion,* IBM Technical Disclosure Bulletin **33**, no.1B (1990)

J.E.E. Baglin, E.E. Marinero and K.A. Rubin, *Method of Selectively Altering and Spatially Modulating Magnetization of Magnetic Media by Ion Implantation,* IBM No. AM9-98-096, (Filed).

B. Terris, J.E.E. Baglin, A.J. Kellock, L.Folks and D. Weller, *Ion Beam Patterned Substrates for High Density Data Storage*, IBM Disclosure No. ARC8-1998-0273, (Filed).

J.E.E. Baglin, A.J. Kellock, B. Terris, D. Weller and L. Folks, *Patterned Magnetic Recording Media Containing Chemically Ordered FePt or CoPt*, U.S. Patent No. 6,331,364 B1, December 18, 2001.

D. Weller, J.E.E. Baglin, B. Terris, B. Lengsfeld, A.J. Kellock, L. Folks and R. Olsen, *Patterned Magnetic Recording Media with Horizontal and Vertical Bits*, IBM Disclosure No. ARC8-1999-0011, (Published).

L. Folks, R. Fontana, B.A. Gurney, J. Childress, J.A. Katine, J.E.E. Baglin and A.J. Kellock, *Shaping of Magnetic Pole Pieces via Ion Implantation*. IBM No. ARC8-2000-0355 [Submitted November, 2000]

J.E.E. Baglin, L. Folks, B.A. Gurney and B.D. Terris, *Ion Beam Definition of Magnetoresistive Field Sensors*, U.S. Patent No. 6,741,429 B1, May 25, 2004.

J.E.E. Baglin, R.D. Bunch, L.J. Crawforth, C.W. Flint, A.J. Kellock and T.C. Reiley, *Modified Strain Region of Strain Reactive Slider with Implanted Ions, Electrons or Neutral Atoms*, U.S. Patent No. 6,747,845 B1, June 8, 2004.

J.E.E. Baglin, H.F. Hamann and Shouheng Sun, *Method and Apparatus for Linking and/or Patterning Self-Assembled Objects* U.S. Patent No. 6,866,898, March 15, 2005.

J.E.E. Baglin, J.R. Childress, L. Folks, R.E. Fontana, B.A. Gurney, J.A. Katine and A.J. Kellock, *Shaping of Magnetic Pole Pieces via Ion Implantation* IBM No. ARC9-2001-0041 [Filed November, 2001]

J.E.E. Baglin, L. Folks, B.A. Gurney and B.D. Terris, *Ion Beam Definition of Magnetoresistive Field Sensors*, U.S. Patent No. 6,884,632 B2, April 26, 2005.

J.E.E. Baglin, R.D. Bunch, L.J. Crawforth, C.W. Flint, A.J. Kellock and T.C. Reiley, *Particle Irradiation Method for Modification of Local Strain in Strain Reactive Structures*, U.S. Patent No. 7,566,483 B2, July28, 2009.

PUBLICATIONS

BOOKS or BOOK CHAPTERS

J. E. E. Baglin and J. M. Poate, (eds.), *Thin Film Phenomena-Interfaces and Interactions*, The Electrochemical Society, Princeton, (1978).

J. E. E. Baglin and J. M. Poate, *Metal-Metal Interdiffusion*, Chapter 9 of *Thin Films - Interdiffusion and Reactions*, eds. J. M. Poate, K. N. Tu and J. W. Mayer, Wiley-Interscience, New York (1978).

J.E.E. Baglin and J.M. Poate, (eds.), *Thin Film Interfaces and Interactions*, The Electrochemical Society, Princeton, (1980).

J. E. E. Baglin, H. B. Harrison, J. L. Tandon and J. S. Williams, *Contacts and Interconnections on Semiconductors*, Chapter 11 of *Beam Modification of Electronic Materials*, eds. J. S. Williams and J. M. Poate, Academic Press (1984).

J. E. E. Baglin, D. R. Campbell and W. K. Chu, editors, *Thin Films and Interfaces II*, (Vol. 25 of Mat. Res. Soc. Symposium Proceedings) Elsevier, N.Y. (1984).

M.L. Green, J.E.E. Baglin, G.Y. Chin, H. Deckman, W. Mayo and D. Narasinhham, editors, *Semiconductor Based Heterostructures: Interfacial Structure and Stability*, The Metallurgical Society Inc., Warrendale, PA, (1986).

J.E.E. Baglin, *Ion Beam Effects on Thin Film Adhesion*, Chapter 15 in *Ion Beam Modification of Insulators*, eds. P. Mazzoldi and G.W. Arnold, Elsevier, Amsterdam (1987).

J.E.E. Baglin, *Interface Tailoring to Enhance Thin Film Adhesion - a Review*, in *Nuclear Physics Applications on Materials Science*, eds E. Recknagel and J.C. Soares, Kluwer Academic Publishers, Dordrecht, The Netherlands (1988), p. 369.

D.M. Mattox, J.E.E. Baglin, R.J. Gottschall and C.D. Batich (Editors), *Adhesion in Solids*, Materials Research Society Symposium Proceedings, Volume 119 (1988).

J.E.E. Baglin and J.S. Williams, *Rutherford Backscattering Spectrometry*, Chapter 3 in *Ion Beams for Materials Analysis*, eds. J.R. Bird and J.S. Williams, Academic Press, Australia, (1989).

J.E.E. Baglin, *Interface Structure and Thin Film Adhesion*, Chapter 14 in *Ion Beam Deposition, Film Modification and Synthesis*, eds. J.J. Cuomo, S.M. Rosznagel and H.R. Kaufman, Noyes Publications, New Jersey (1990).

J.E.E. Baglin, *Interface Design for Thin Film Adhesion*, Chapter 13 of *Fundamentals of Adhesion*, ed. L.-H. Lee, Plenum Publishing Corp., New York (1990).

J.E.E. Baglin, *Hydrogen Profiling by Elastic Recoil Spectrometry*, Chapter 9 in *Encyclopedia of Materials Characterization*, eds. C.R. Brundle, C.A. Evans, Jr. and S. Wilson, Butterworth-Heinemann, Boston (1993).

J.E.E. Baglin and R.C. White (co-editors), *Fundamental Aspects of Adhesion*, Journal of Adhesion Science and Technology (Special Issue), **8**, 835-951 (1994).

J.E.E. Baglin, *Interface Structure, Adhesion and Ion Beam Processing*, Chapter 4 in *Materials and Processes for Surface and Interface Engineering*, ed. Y. Pauleau, Kluwer Academic Publishers, Dordrecht, The Netherlands (1995).

J.E.E. Baglin, K. Vedula and J.A. Clum, (eds.), *Changing the Paradigm in Materials Education*, Special Issue, Journal of Materials Education **18** Nos. 1-2, (1996).

J.E.E. Baglin, R. Abbaschian and K. Vedula, (eds.), *Proceedings of the Workshop on Materials Education, 1996*, Special Issue, Journal of Materials Education **19**, Nos. 1-2 (1997).

J.E.E. Baglin, *Ion Beam Induced Adhesion at Metal-Polymer Interfaces*, in *Metallized Plastics – Fundamental and Applied Aspects*, ed. K.L. Mittal, vol. 5/6, p. 365 (1998), VSP International Science Publishers, Utrecht, The Netherlands.

J.E.E. Baglin, K. P. Constant and R. Abbaschian, (eds.), *Proceedings of the MRS Workshop on Materials Education, 1997*, Journal of Materials Education **20**, Nos. 1-2, (1998).

J.E.E. Baglin, (ed.), *Proceedings of the MRS Workshop on Materials Education, 1998*, Journal of Materials Education **21**, Nos. 1-2, (1999).

J.E.E. Baglin, (ed.), *Proceedings of the MRS Workshop on Materials Education, 1999*, Journal of Materials Education **22**, Nos. 1-3, (2000).

J.E.E. Baglin, Editor, Journal of Materials Education, Volumes **23 – 28** (2001 - 2006).

J.E.E. Baglin, *Ion Beam Effects in Magnetic Thin Films*, Chapter 3 in *Engineering Thin Films and Nanostructures with Ion Beams*, ed. E. J. Knystautis, CRC Press, Taylor and Francis, Boca Raton (2004).

J.E.E. Baglin, Executive Editor of "*IUMRS Facets*", (the quarterly newsletter on Materials Policy and Research Highlights of the International Union of Materials Research Societies), Volumes **4** (2005) and **5** (2006).

J.E.E. Baglin, with A. Oztarhan, I.G. Brown and D. Ila, (eds.) *Proceedings of the 14th International Conference on Surface Modification of Materials by Ion Beams*, Surface Coatings and Technology **201** (21-22) (2007).

J.E.E. Baglin, with D. Ila, N. Kishimoto and P.K. Chu, (eds.), *Ion Beam Based Nanoscale Fabrication*, Mater. Res. Soc. Symp. Proc. Vol. **1020**, (2007), Materials Research Society, Warrendale, PA.

J.E.E. Baglin, with D.C. Kothari, W. Ensinger and M. Sundararaman, (eds.), *Proceedings of the 15th International Conference on Surface Modification of Materials by Ion Beams*, Surface Coatings and Technology **203** (17-18) (2009).

J.E.E. Baglin, with D. Ila, P.K. Chu, N. Kishimoto, J.K.N. Lindner (eds.) *Ion Beams and Nano Engineering*, Mater. Res. Soc. Symp. Proc. Vol. **1181**, (2009), Materials Research Society, Warrendale, PA.

REFEREED JOURNAL ARTICLES

J. E. E. Baglin, B. M. Spicer, F. R. Allum and H. H. Thies, *Photoneutrons from Natural Magnesium*, Aust. J. Phys. **11**, 263 (1958).

J. E. E. Baglin, B. M. Spicer, H. H. Thies and F. R. Allum, *The Giant Resonance of Photodisintegration of Tantalum*, Aust. J. Phys. **11**, 298 (1958).

H. H. Thies, J. E. E. Baglin and B. M. Spicer, *The Photoneutron Cross Section of Be^9 in the Intermediate Energy Range*, Aust. J. Phys. **12**, 21 (1959).

J. E. E. Baglin, M. N. Thompson and B. M. Spicer, *Photodisintegration of Al^{27} I (Photoneutron Cross Section)*, Nuclear Phys. **22**, 207 (1961).

J. E. E. Baglin, M. N. Thompson and B. M. Spicer, *Photodisintegration of Al^{27} II (Theoretical)*, Nuclear Phys. **22**, 216 (1961).

J. E. E. Baglin and B. M. Spicer, *Photodisintegration of Ca^{40}* , Nuclear Phys. **54**, 549 (1964).

J. E. E. Baglin, M. N. Thompson, J. M. Taylor and B. M. Spicer, *The $Al^{27}(\gamma n)Al^{26}$ Cross Section*, Nuclear Phys. **64**, 486 (1966).

- B. C. Cook, J. E. Griffin, J. E. E. Baglin and J. N. Bradford, *Photoneutron Cross Section of O^{16} from Threshold to 65 MeV*, Phys. Rev. **143**, 712 (1966).
- B. C. Cook, J. E. Griffin, J. E. E. Baglin and J. N. Bradford, *Photoneutron Cross Section of C^{12} from Threshold to 65 MeV*, Phys. Rev. **143**, 724 (1966).
- R. O. Owens and J. E. E. Baglin, *Decay Modes of O^{16} Giant Resonance States*, Phys. Rev. Letters **17**, 1268 (1966).
- J. E. E. Baglin and M. N. Thompson, *A High-Resolution Study of the $O^{16}(\gamma p_0)^{15}N$ Reaction*, Phys. Letters **25B**, 256 (1967).
- N. K. Sherman, J. E. E. Baglin and R. O. Owens, *Phototriton Cross Section of Li^6* , Phys. Rev. **169**, 771 (1968).
- J. E. E. Baglin and M. N. Thompson, *A Spectrometer for Photoprotons*, Nuc. Instr. and Methods **71**, 71 (1969).
- F. W. K. Firk, J. E. E. Baglin, C. P. Wu and T. W. Phillips, *Correlations in the Energies and Widths of Structure Observed in the Reactions $^{40}Ca(\gamma n_0)^{39}Ca$ and $^{40}Ca(\gamma p_0)^{39}K$* , Phys. Letters **29B**, 359 (1969).
- J. E. E. Baglin and M. N. Thompson, *A Study of $^{16}O(\gamma p_0)$ Angular Distributions at Giant Resonance Energies*, Nuclear Physics **A138**, 73 (1969).
- J. E. E. Baglin, *Experimental Possibilities for a 50 MeV Electron Linac with Long Duty Factor*, IEEE Trans. Nucl. Sci. **NS-18**, 572 (1971).
- J. F. Ziegler and J. E. E. Baglin, *Determination of Surface Impurity Concentration Profiles by Nuclear Backscattering*, J. Appl. Phys. **42**, 2031 (1971).
- J. E. E. Baglin, B. C. Cook and R. C. Morrison, *The Ames Laboratory Electron Linear Accelerator*, Major Facility Proposal to USAEC (Ames Laboratory) (1971) and Revised Edition (1972).
- J. E. E. Baglin and R. W. Carr, *Tables of Angular Momentum Coefficients for Nuclear (γ Particle) and (Particle, γ) Reactions*, Nucl. Data Tables **10**, 143 (1971).
- J. E. E. Baglin, E. J. Bentz, R. W. Carr and H. L. Schultz, *Response of the NBS P2 Standard Ionization Chamber in Intense Pulsed Beams* Nucl. Instr. & Methods **104**, 575 (1972).
- J. E. E. Baglin, R. W. Carr, E. J. Bentz and C. -P Wu, *$D(\gamma p)$ Absolute Cross Section and Angular Distribution 17-25 MeV*, Nucl. Phys. **A201**, 593 (1973).
- J. F. Ziegler, J. E. E. Baglin and G. W. Cole, *A Technique for Determining Concentration Profiles of Boron Impurities in Substrates*, J. Appl. Phys. **43**, 3809 (1972).
- J. F. Ziegler, J. E. E. Baglin and G. Cole, *The Discovery of Anomalous Base Regions in Transistors*, IBM Internal Report RC No.3643 (1971).
- J. F. Ziegler, J. E. E. Baglin, B. L. Crowder, B. J. Masters and G. W. Cole, *Boron Atom Distributions Obtained by Ion Implantation Doping of Silicon*, Appl. Phys. Letts. **21**, 16 (1972).
- J. E. E. Baglin, R. W. Carr and E. J. Bentz, *Photodisintegration of ^{14}N - Cross Section and Angular Distribution for $^{14}N(\gamma p_0)$* , Phys. Rev. **C6**, 2032 (1972).

- J. E. E. Baglin, A. J. Bureau, B. C. Cook, G. E. Holland and R. C. Morrison, *100% Duty Factor Electron Linac*, IEEE Trans. Nucl. Sci. **NS-20**, 932 (1973).
- J. F. Ziegler and J. E. E. Baglin, *Does Backscattering of ^4He Ions by Nuclei Obey the Rutherford Cross Section Formula?*, J. Appl. Phys. **45**, 1888 (1974).
- J. F. Ziegler, J. E. E. Baglin and A. Gangulee, *Thermal Stability of a Proposed Magnetic Bubble Metallurgy*, Appl. Phys. Lett. **24**, 36 (1974).
- J. E. E. Baglin and J. F. Ziegler, *Tests of Bragg Rule for Energy Loss of ^4He Ions in Solid Compounds*, J. Appl Phys. **45**, 1413 (1974).
- J. E. E. Baglin, E. J. Bentz and R. W. Carr, *Particle Configurations of Giant E1 States in the $^{14}\text{N}(\gamma p_2)$ and $^{14}\text{N}(\gamma p_0)$ Processes*, Phys. Rev. **C10**, 24 (1974).
- J. E. E. Baglin, V. Brusic, E. Alessandrini and J. Ziegler, in *Applications of Ion Beams to Metals*, ed. Picraux, Eernisse, Vook, Plenum Press, N. Y. (1974) p. 169.
- J. E. E. Baglin and V. Brusic, *Thin Film Interdiffusion of Cr and Cu*, Thin Solid Films **25**, 449 (1975).
- J. E. E. Baglin and F. M. d'Heurle, *Interdiffusion Kinetics in Thin Film Couples*, in *Ion Beam Surface Layer Analysis*, ed. O. Meyer et al., Plenum Press, New York (1976), p. 385.
- J. E. E. Baglin and W. N. Hammer, *Versatile Apparatus for Real-Time Profiling of Interacting Thin Films*, in *Ion Beam Surface Layer Analysis*, ed. O. Meyer et al., Plenum Press, New York (1976), p. 447.
- D. W. Ormond, E. A. Irene, J. E. E. Baglin and B. L. Crowder, *Expansion of Thermally Grown SiO_2 Thin Films upon Irradiation with Energetic Ions*, in *Ion Implantation in Semiconductors*, eds. F. Chermow, J. Borders and D. Brice, Plenum Press, New York (1977), p. 305.
- J. E. E. Baglin, F. M. d'Heurle and W. N. Hammer, *The Interaction Process for Ag-Al Polycrystalline Thin Film Couples*, J. Appl. Phys., **50**, 266 (1979).
- J. E. E. Baglin, F. M. d'Heurle and W. N. Hammer, *The Al-Ag System -- Interdiffusion Kinetics*, in *Thin Film Phenomena; Interfaces and Interactions*, eds. J. Baglin and J. Poate, The Electrochemical Society, Princeton (1978), p. 171.
- J. E. E. Baglin, F. M. d'Heurle, W. N. Hammer and S. Zirinsky, *Interactions between Cr and Pt films - The Cr-Pt Equilibrium Diagram*, *ibid.*, p. 185.
- J. E. E. Baglin, J. Dempsey, F. d'Heurle and W. Hammer, *Epitaxial Relations in Films of Cr, Pt and CrPt on Sapphire*, *ibid.*, p. 150; also J. Electrochem. Soc., **126**, 277 (1979).
- J. E. E. Baglin, F. M. d'Heurle and S. Zirinsky, *Interactions between Cr and Pt Films - New Phases*, J. Electrochem. Soc., **125**, 1854 (1978).
- J. E. E. Baglin, F. M. d'Heurle, W. N. Hammer and S. Zirinsky, *The Interaction between Cr and Pt Films Deposited by Vacuum Evaporation*, in *Proceedings 7th International Vacuum Congress*, eds. R. Dobrozemsky, F. Rudenauer, F. P. Viehbock, and A. Breth, Vienna (1977), p. 2127; also IBM Internal Report RC 6526.
- J. E. E. Baglin and W. K. Chu, *Stopping Power of 0.3-2.6 MeV ^4He Ions in Fe and Ni*, Nuclear Instruments and Methods **149**, 695 (1978).
- J. E. E. Baglin, J. Dempsey, F. d'Heurle, W. Hammer and S. Zirinsky, *An Alternative Marker Experiment in the Formation of Mo and W Silicides*, Applied Physics Letters, **33**, 289 (1978).

- S. Zirinsky, W. Hammer, F. d'Heurle and J. E. E. Baglin, *Oxidation Mechanisms in WSi₂*, Applied Physics Letters **33**, 76 (1978).
- T. W. Hickmott and J. E. E. Baglin, *Stoichiometry and Atomic Defects in RF-sputtered SiO₂*, J. Appl. Phys. **50**, 317 (1979).
- S. Petersson, J. Baglin, W. Hammer, F. d'Heurle, J. de Sousa Pines, I. Ohdomari, P. Tove and K. N. Tu, *Formation of Iridium Silicides from Ir Thin Films on Si Substrates*, J. of Applied Physics **50**, 3357 (1979).
- R. Tsu, J. E. E. Baglin, G. J. Lasher and J. C. Tsang, *Laser Induced Recrystallization and Damage in GaAs*, Applied Physics Letters **34**, 153 (1979).
- J. Baglin, J. Dempsey, W. Hammer, F. d'Heurle, S. Petersson and C. Serrano, *The Formation of Silicides in Mo-W Bilayer Films on Si Substrates - A Marker Experiment*, J. Electronic Materials **8**, 641 (1979).
- J. Baglin, J. Dempsey, W. Hammer, F. d'Heurle and S. Petersson, *Nucleation Controlled Thin Film Interactions - Some Silicides*, Applied Physics Letters **35**, 285 (1979).
- S. Petersson, R. Anderson, J. Baglin, J. Dempsey, W. Hammer, F. d'Heurle and S. Laplaca, *The Thin-Film Formation of Rhodium Silicides*, J. Appl. Phys. **51**, 373 (1980).
- R. Tsu, R. T. Hodgson, T. Y. Tan and J. E. E. Baglin, *Order-Disorder Transition in Single-Crystal Silicon Induced by Pulsed UV Laser Irradiation*, Phys. Rev. Letters **42**, 1356 (1979).
- R. Tsu, J. Baglin, G. Lasher and J. Tsang, *Laser Induced Damage and Recrystallization of Ion Implanted GaAs by Frequency-Doubled Nd-YAG Laser*, AIP Conference Proceedings No. **50** (1979) p. 623.
- R. Tsu, J. Baglin, T. Y. Tan, M. Y. Tsai, K. C. Park and R. Hodgson, *Laser Recrystallization of Ion-Implanted Si by Frequency-Doubled Nd-YAG Laser*, *ibid.* p. 344.
- J. E. E. Baglin, F. M. d'Heurle, W. N. Hammer and S. Petersson, *An Interface-Marker Technique Applied to the Study of Metal Silicide Growth*, Nuclear Instruments and Methods, **168**, 491 (1980).
- M. Y. Tsai, F. F. Morehead, J. E. E. Baglin and A. E. Michel, *Shallow Junctions by High-Dose As Implants in Si - Experiments and Modeling*, J. Appl. Phys. **51**, 3230 (1980).
- R. Tsu, J. Baglin, T. Y. Tan and R. J. von Gutfeld, *On Laser Induced "Undercooled Liquid" State of Amorphous Silicon*,:ehp1. In *Laser and Electron Beam Processing of Electronic Materials*, eds. G. Rozgonyi, L. Anderson, G. Celler, The Electrochemical Society, Princeton, N.J. (1980).
- J. Baglin, F. M. d'Heurle and C. S. Petersson, *Nucleation-Controlled Thin Film Interactions During Silicide Formation*, in *Thin Film Interfaces and Interactions*, eds. J. Baglin and J. Poate, The Electrochemical Society, Princeton, N.J. (1980) p. 341.
- J. Angilello, J. Baglin, F. d'Heurle, S. Petersson and A. Segmüller, *Stresses in Silicides Formed by the Interaction of Metal Films with Silicon Substrates*, *ibid.* p. 369.
- S. Petersson, J. Baglin, F. d'Heurle, J. Dempsey, J. Harper, C. Serrano and M. Y. Tsai, *Observations about the Formation of Thin Disilicide Films by Solid-State Metal-Silicon Interaction - Tantalum*, *ibid.* p. 290.
- E. Rimini, W. K. Chu, J. Baglin and R. Hodgson, *Laser Annealing of Silicon Implanted with Both Argon and Arsenic*, Applied Physics Letters, **37**, 81 (1980).

- E. Rimini and J. E. E. Baglin, *Pulsed Laser Irradiation of Lead-implanted Single-Crystal Copper Films*, Appl. Phys. Letters **37**, 481 (1980).
- R. T. Hodgson, J. E. E. Baglin, R. Pal, J. M. Neri and D. A. Hammer, *Ion Beam Annealing of Semiconductors*, Appl. Phys. Letters **37**, 187 (1980).
- E. Spiller, I. Haller, R. Feder, J. E. E. Baglin and W. N. Hammer, *Graded Index Anti-reflecting Surfaces on Plastic Materials Produced by Ion Implantation*, Applied Optics **19**, 3022 (1980).
- J. E. E. Baglin, F. M. d'Heurle and C. S. Petersson, *The Formation of Silicides from Thin Films of Some Rare-Earth Metals*, Appl. Phys. Letters **36**, 594 (1980).
- W. Reuter and J. E. E. Baglin, *Secondary Ion Mass Spectroscopy and Rutherford Backscattering Spectroscopy for the Analysis of Thin Films*, J. Vac. Sci. Tech. **18**, 282 (1981).
- J. Angilello, J. E. E. Baglin, F. Cardone, J. Dempsey, F. M. d'Heurle, A. P. Segmuller and E. Tierney, *Tantalum Silicide Films Deposited by DC Sputtering*, Journal of Electronic Materials **10**, 59 (1981).
- J. E. E. Baglin, F. M. d'Heurle and C. S. Petersson, *Diffusion Marker Experiments with Rare-Earth Silicides and Germanides – Relative Mobilities of the Two Atom Species*, J. Appl. Phys. **52**, 2841 (1981).
- J. E. E. Baglin, R. T. Hodgson, W.-K. Chu, J. M. Neri, D. A. Hammer and L. J. Chen, *Pulsed Ion Beam Annealing - Semiconductors and Silicides*, Nuclear Instruments and Methods **191**, 169 (1981).
- C. S. Petersson, J. E. E. Baglin, J. Dempsey, F. M. d'Heurle and S. J. LaPlaca, *Silicides of Ruthenium and Osmium - Thin Film Reactions, Diffusion, Nucleation and Stability*, J. Appl. Phys. **53**, 4866 (1982).
- J. M. Neri, D. A. Hammer, J. E. E. Baglin and R. T. Hodgson, *An Intense Pulsed Barium Ion Source*, IEEE Trans. Nucl. Sci., **NS-28**, 3378 (1981).
- W. K. Chu, S. R. Mader, E. F. Gorey, J. E. E. Baglin, R. T. Hodgson, J. M. Neri and D. A. Hammer, *Pulsed Ion Beam Irradiation of Silicon*, Nucl. Instr. and Methods **194**, 443 (1982).
- L. J. Chen, L. S. Hung, J. W. Mayer, J. E. E. Baglin, J. M. Neri and D. Hammer, *Epitaxial NiSi₂ Formation by Pulsed Ion Beam Annealing*, Appl. Phys. Letters **40**, 595 (1982).
- J. E. E. Baglin, H. A. Atwater, D. Gupta and F. M. d'Heurle, *Radioactive Ni⁺⁺ Tracer Study of Nickel Silicide Growth Mechanism*, Thin Solid Films **93**, 255 (1982).
- R. T. Hodgson, J. E. E. Baglin, A. Michel, W. Reuter, S. Mader and J. C. Gelpey, *Rapid Thermal Annealing of Silicon Using An Ultrahigh Power Arc Lamp*, Proc. Mat. Res. Soc. (North-Holland), **13**, 355 (1983).
- J. E. E. Baglin, F. M. d'Heurle and C. S. Petersson, *Interface Effects in the Formation of Silicon Oxide on Metal Silicide Layers Over Silicon Substrates*, J. Appl. Phys. **54**, 1849 (1983).
- J. A. Cairns, J. E. E. Baglin, G. J. Clark and J. F. Ziegler, *Strong Metal-Support Interactions - Pt and Rh on Al₂O₃ and TiO₂*, J. of Catalysis **83**, 301 (1983).
- L. J. Chen, L. S. Hung, J. W. Mayer and J. E. E. Baglin, *Pulsed Proton Beam Annealing of Co-Si Thin Films Systems*, Proc. Mat. Res. Soc. (North-Holland) **13**, 709 (1983).
- J. E. E. Baglin, R. T. Hodgson, J. M. Neri and R. Fastow, *A Test for Non-Thermal Transient Annealing in Silicon*, Applied Physics Letters **43**, 299 (1983).

- J. E. E. Baglin, J. A. Cairns, G. J. Clark and J. F. Ziegler, *Interactions of Al₂O₃ with Rh and Pt Thin Films*, J. Molecular Catalysis **20**, 299 (1983).
- F. M. d'Heurle, C. S. Peterson, J. E. E. Baglin, S. LaPlaca and C. Y. Wong, *The Formation of Thin Films of NiSi – Metastable Structure and Diffusion Mechanisms in Intermetallic Compounds*, J. Appl. Phys. **55**, 4208 (1984).
- J. E. E. Baglin, G. J. Clark, J. A. Cairns and J. F. Ziegler, *Catalyst Metal-Support Interactions- -Rutherford Backscattering Spectrometry Applied to Discontinuous Films*, Nuclear Instruments and Methods **218**, 445 (1983).
- F. M. d'Heurle, C. S. Peterson, J. E. E. Baglin, S. LaPlaca and C. Y. Wong, *The Formation of Thin Films of NiSi – Metastable Structure and Diffusion Mechanisms in Intermetallic Compounds*, J. Appl. Phys. **55**, 4208 (1984).
- J. E. E. Baglin, G. J. Clark and J. Bøttiger, *Ion Beam Enhanced Adhesion of Thin Films*, Proc. Mat. Res. Soc. **25**, 179 (1984).
- J. Bøttiger, J. E. E. Baglin, V. Brusic, G. J. Clark and D. Anfiteatro, *Effects on Metal/Metal Oxide Interface Adhesion Due to Electron and Ion Irradiation*, Proc. Mat. Res. Soc. **25**, 203 (1984).
- G. J. Clark, J. E. E. Baglin, F. M. d'Heurle, C. W. White, G. Farlow and J. Narayan, *Ion Beam Irradiation of Metal Films on SiO₂*, Proc. Mat. Res. Soc. **27**, 55 (1984).
- C. W. White, G. Farlow, J. Narayan, G. J. Clark and J. E. E. Baglin, *Ion Beam Mixing of Metal Films on SiO₂*, Materials Letters **2**, 367 (1984).
- J.E.E. Baglin and G.J. Clark, *Ion Beam Bonding of Thin Films*, Nucl. Instr. and Methods **B7/8**, 881 (1985).
- F. M. d'Heurle, J.E.E. Baglin and G.J. Clark, *Correlation Between Chemistry and the Amount of Mixing in Bilayers Submitted to Ion Bombardment*, J. Appl. Phys. **57**, 1426 (1985).
- F. d'Heurle, C.S. Petersson, J.E.E. Baglin, S.J. LaPlaca and C.Y. Wong, *Formation of Thin Films of NiSi – Metastable Structure, Diffusion Mechanisms in Intermetallic Compounds*, J. Appl. Phys. **55**, 4208 (1984).
- J.E.E. Baglin, *Adhesion at Metal-Ceramic Interfaces – Ion Beam Enhancement and the Role of Contaminants*, Proc. Mat. Res. Soc. **47**, 3 (1985).
- G.C. Farlow, B.R. Appleton, L.A. Boatner, C.J. McHargue, C.W. White, G.J. Clark and J.E.E. Baglin, *Thermodynamic Constraints on Ion Beam Mixing of Metals on Insulators*, Proc. Mat. Res. Soc. **45**, 137 (1985).
- D.K. Sood, W.M. Skinner, J. Gazecki, J.S. Williams and J.E.E. Baglin, *A Study of Ion Beam Induced Adhesion Effects in Some Metal/Insulator Systems*, Proc. Mat. Res. Soc. **45**, 219 (1985).
- J.E.E. Baglin, *The Role of Interface Mixing in Ion Beam Enhanced Diffusion*, Proc. 2nd Int. Workshop on Ion Beam Mixing, CalTech (1985).
- K.Y. Ahn, S.R. Herd, J.E.E. Baglin and J.U. Han, *Structure and Properties of Coevaporated WSi_x Films*, J. Vac. Sci. Technol. **A3**, 2268 (1985).
- J.E.E. Baglin, A. Schrott, R.D. Thompson, K.N. Tu and A. Segmuller, *Ion Induced Adhesion via Interfacial Compounds*, Nucl. Instruments and Methods **B19/20**, 782 (1987).

- D.K. Sood and J.E.E. Baglin, *Ion Beam Induced Modification of Energy of Adhesion for Copper Films on Al₂O₃ Substrates*, Nucl. Instruments and Methods **B19/20**, 954 (1987).
- J.E.E. Baglin, *Radiation Enhanced Adhesion of Thin Films, in Surface and Colloid Science in Computer Technology*, ed. K. Mittal, Plenum Press, New York (1987), p.211.
- G. Burns, F.H. Dacol, C.R. Wie, J.E.E. Baglin, E. Burstein and M. Cardona, *Annealing Effects in Ion Bombarded GaAs: Raman Measurements*, Proc. Mat. Res. Soc. **82** (1987).
- Chin-An Chang, J.E.E. Baglin, A.G. Schrott and K.C. Lin, *Enhanced Cu-Teflon Adhesion by Presputtering Prior to the Cu Deposition*, Appl. Phys. Letters **51**, 103 (1987).
- P.B. Madakson and J.E.E. Baglin, *Adhesion of Reactive Ion Implanted Copper Films on Al₂O₃ and SiO₂*, Mat. Res. Soc. Symp. Proc. **93**, 41 (1987).
- Chin-An Chang, K.C. Lin, J.E.E. Baglin, G. Coleman and J. Park, *Effect of Presputtering on the Adhesion of Cu to Teflon*, Mat. Res. Soc. Symp. Proc. **93**, 369 (1987).
- J.E.E. Baglin, *Thin Film Adhesion: Interface Construction on an Atomic Scale*, in *Opportunities and Research Needs in Adhesion Science and Technology*, eds. G.G. Fuller and K.L. Mittal, Proc. NSF Workshop, Stanford University, October 1987, p. 3-1 (1988).
- J.E.E. Baglin, *Thin Film Adhesion: New Possibilities for Interface Engineering*, Materials Science and Engineering **B1**, 1 (1988).
- J.E.E. Baglin, *Interface Tailoring for Adhesion Using Ion Beams*, Nuclear Instruments and Methods **B39**, 764 (1989).
- A.J. Kellock and J.E.E. Baglin, *Role of the Interface in the Adhesion of Cu to SiO₂*, Mat. Res. Soc. Proc. **153**, 391 (1989).
- T.T. Bardin, J.G. Pronko, A.J. Kellock and J.E.E. Baglin, *Adhesion Studies of Au Film on GaAs Using Ion Assisted Deposition Techniques*, Mat. Res. Soc. Symp. Proc. **157**, 19 (1990).
- A.J. Kellock, J.E.E. Baglin and T.T. Bardin, *Adhesion Improvement of Au on GaAs using Ion Beam Assisted Deposition*, Nuclear Instruments and Methods **B59/60**, 249 (1991).
- J.E.E. Baglin, *Ion Beam Enhancement of Metal-Insulator Adhesion*, Nuclear Instruments and Methods **B65**, 119 (1992).
- J.E.E. Baglin, A.J. Kellock, M.A. Crockett and A.H. Shih, *Absolute Cross Section for Hydrogen Forward Scattering*, Nuclear Instruments and Methods **B64**, 469 (1992).
- A.J. Kellock and J.E.E. Baglin, *Absolute Cross Section for D(⁴He,D)⁴He Forward Scattering*, Nuclear Instruments and Methods **B79**, 493 (1993).
- M.V.R. Murty, H.A. Atwater, A.J. Kellock and J.E.E. Baglin, *Very Low Temperature Silicon Molecular Beam Epitaxy: The Role of Low Energy Ion Irradiation*, Applied Physics Letters **62**, 2566 (1993).
- J.E.E. Baglin, *Thin Film Bonding Using Ion Beam Techniques - A Review*, IBM Journal of Research and Development **38**, 413 (1994).
- A.J. Kellock, J.E.E. Baglin, K.R. Coffey, J.K. Howard, M.A. Parker and D.L. Neiman, *Interface Reaction Kinetics for Permalloy-Tantalum Thin Film Couples*, Mat. Res. Soc. Symp. Proc. **343**, 211 (1994).

- J.E.E. Baglin, M.H. Tabacniks, A.J. Kellock, K.R. Coffey, J.K. Howard and M.A. Parker, *RBS Investigation of Low Temperature Interdiffusion Kinetics for Thin Metal Films*, Proceedings of the International Workshop on Applications of Ion Beam Analysis, Sydney, Australia, 1995, ed. D. Cohen, ANSTO, Menai, Australia, 1995.
- M.H. Tabacniks, A.J. Kellock, J.E.E. Baglin, K.R. Coffey, J.K. Howard and M.A. Parker, *Thermal Degradation of Tantalum-Nickel Thin Film Couples*, Mat. Res. Soc. Symp. Proc. **382**, 389-394 (1995).
- M.H. Tabacniks, A.J. Kellock and J.E.E. Baglin, *PIXE for Thin Film Analysis*, IBM Internal Report No. **RJ-10,000** (1996).
- D.H. Lee, B. Park, D.B. Poker, L. Riester, Z.C. Feng and J.E.E. Baglin, *Surface Hardness Enhancement in Ion Implanted Amorphous Carbon*, J. Appl. Phys. **80**, 1480 (1996).
- A.J. Kellock, M.H. Tabacniks, J.E.E. Baglin, N.S. Somcio, T.T. Bardin and D.C. Miller, *Mechanism for Ion Beam Passivation of Copper Surfaces*, Nucl. Instr. and Methods **B127/128**, 742 (1997).
- M.H. Tabacniks, A.J. Kellock and J.E.E. Baglin, *PIXE for Thin Film Analysis*, Proc. 14th Int. Conf. on Applications of Accelerators in Research and Industry, AIP Conference Proc. **392**, 563 (1997).
- J.E.E. Baglin, M.H. Tabacniks, R. Fontana, A.J. Kellock and T.T. Bardin, *Effects of Ion Irradiation on Ferromagnetic Thin Films*, Materials Science Forum **248-249**, 87-93 (1997).
- J.E.E. Baglin, M.H. Tabacniks, A.J. Kellock, N.S. Somcio and T.T. Bardin, *Ion Induced Passivation of Metal Surfaces: The Phenomenon and its Origins*, Materials Science Forum **248-249**, 155-158 (1997).
- J. Ullmann, J.E.E. Baglin and A.J. Kellock, *Effects of MeV Irradiation of Cubic Boron Nitride Thin Films*, J. Appl. Phys. **83**, 2980 (1998).
- J.E.E. Baglin, M.H. Tabacniks and A.J. Kellock, *RBS as a Tool for Topographic Modelling of Polycrystalline Thin Film Interactions*, Nucl. Instr. and Methods in Physics **B136-138**, 241 (1998).
- J.E.E. Baglin, J.C. Davis, P. Gabella, V.M Prozesky and S. Sie, *Future Analytical Needs for Industry and Technology*, Nucl. Instruments and Methods in Physics **B136-138**, 35 (1998).
- M. Szabadi, P. Hess, A.J. Kellock, H. Coufal and J.E.E. Baglin, *Elastic and Mechanical Properties of Ion Implanted Silicon Determined by Surface Acoustic Wave Spectrometry (SAWS)*, Phys. Rev. **B58**, 8941 (1998).
- T.H. Westmore, J.E.E. Baglin, V.R. Deline, A.J. Kellock, M.A. Parker, R. Beyers and E.L. Allen, *Thermal Instability of the Cu-Ni Interface Above 200C*, Mat. Res. Soc. Symp. Proc. **517**, 13 (1998).
- J.E.E. Baglin, A.J. Kellock, T.T. Bardin, T. Karis and D. Keck, *Corrosion Protection of Cu, Fe, Mn and Co Surfaces*, Mat. Res. Soc. Symp. Proc. **517**, 421 (1998).
- J. Ullmann, A.J. Kellock and J.E.E. Baglin, *Reduction of Intrinsic Stress in Cubic Boron Nitride Thin Films*, Thin Solid Films **341**, 238 (1999).
- B.D. Terris, L. Folks, D. Weller, J.E.E. Baglin and A.J. Kellock, *Ion Beam Patterning of Magnetic Films Using Stencil Masks*, Appl. Phys. Letters, **75**, 403 (1999).
- D. Weller, J.E.E. Baglin, A.J. Kellock, K.A. Hannibal, M.F. Toney, G. Kusinski, S. Lang, L. Folks, M. Best and B.D. Terris, *Ion Induced Magnetization Reorientation in Co/Pt Multilayers for Patterned Media*, J. Appl. Phys. **87**, 5768 (2000).

- B.D. Terris, D. Weller, L. Folks, J.E.E. Baglin, A.J. Kellock, H. Rothuizen and P. Vettiger, *Patterning Magnetic Films by Ion Beam Irradiation*, J. Appl. Phys. **87**, 7004 (2000).
- L. Folks, J.E.E. Baglin, A.J. Kellock, M.J. Carey, B.D. Terris and B. Gurney, *Track Width Definition of Giant Magnetoresistive Sensors by Ion Irradiation*, IEEE Trans. Mag. **37**, 1730 (2001).
- O. Hellwig, D. Weller, A.J. Kellock, J.E.E. Baglin and E. E. Fullerton, *Magnetic Patterning of Chemically Ordered CrPt₃ Films*, Appl. Phys. Letters **79**, 1151 (2001).
- L. Folks, J.E.E. Baglin, A.J. Kellock, M.J. Carey, B.D. Terris and B. Gurney, *Track Width Definition of Giant Magnetoresistive Sensors by Ion Irradiation*, IEEE Trans. Magn. **37**, 1730 (2001)
- J.E.E. Baglin, C.T. Rettner, B.D. Terris, D. Weller, J.-U. Thiele, A.J. Kellock, S. Anders and T. Thomson, *Ion Beam Modification of Perpendicular Magnetic Anisotropy in [Co/Pt]_n Multilayers and FePt Thin Films*, in *Engineering Thin Films with Ion Beams, Nanoscale Diagnostics, and Molecular Manufacturing*, SPIE Proceedings Vol. **4468**, (2001), SPIE, Bellingham, WA. p.1.
- C.T. Rettner, S. Anders, J.E.E. Baglin, T. Thomson and B.D. Terris, *Characterization of the Magnetic Modification of Co/Pt Multilayer Films by He⁺, Ar⁺ and Ga⁺ Ion Irradiation*, Appl. Phys. Letters **80**, 279 (2002).
- G.J. Kusinski, K.M. Krishnan, D. Weller, B.D. Terris, L. Folks, A.J. Kellock, J.E.E. Baglin and G. Thomas, *Lorenz Transmission Electron Microscopy Investigation of Magnetically Patterned Co/Pt Multilayers*, in *Proceedings of Magnetic Storage Systems Beyond 2000*, NATO-ASI, Kluwer Academic Publishers, Dordrecht. (2002).
- S. Sun, S. Anders, H.F. Hamann, J.-U. Thiele, J.E.E. Baglin, T. Thomson, E.F. Fullerton, C.B. Murray and B.D. Terris, *Polymer Mediated Self-Assembly of Magnetic Nanoparticles*, J. Amer. Chem. Soc. **124**, 2884-2885 (2002).
- S. Sun, S. Anders, T. Thomson, J.E.E. Baglin, M.F. Toney, H.F. Hamann, C.B. Murray and B.D. Terris, *Controlled Synthesis and Assembly of FePt Nanoparticles*, J.Phys. Chem. B, **107**, 5419-5425 (2003).
- S. Garcia-Blanco, A.J. Kellock, J.E.E. Baglin, A Glidle, J.M. Cooper, J.S. Aitchison and R.M. De La Rue, *Fabrication of Optical Waveguides by 2 MeV Ar⁺ Irradiation of Germanium-Doped Flame-Hydrolysis Deposited Silica*, Nuclear Instrum. and Methods **B206**, 440-443 (2003).
- Z.Z. Bandic, H. Xu, J.E.E. Baglin and T.R. Albrecht, *Flexible Magnetics: Magnetic Lithography and Fabrication of Magnetic Masks on Thin Plastic Substrates*, Mat. Res. Soc. Symp. Proc. **769** (2003).
- L. Folks, R.E. Fontana, B.A. Gurney, J.R. Childress, S. Maat, J.A. Katine, J.E.E. Baglin and A.J. Kellock, *Localized Magnetic Modification of Permalloy Using Cr⁺ Ion Implantation*, J. Phys. D.: Appl. Phys. **36**, 2601-2604 (2003).
- J.E.E. Baglin, S. Sun, A.J. Kellock, T. Thomson, M.F. Toney, B.D. Terris and C.B. Murray, *Ion Beam Stabilization of Nanoparticle Arrays for Magnetic Storage Media*, Mat. Res. Soc. Symp. Proc. **777**, T6.5.1 (2003).
- T. Thomson, B.D. Terris, M.F. Toney, S. Raoux, J.E.E. Baglin, S.L Lee and S. Sun, *Silicide Formation and Particle Size Growth in High Temperature Annealed, Self-Assembled FePt Nanoparticles*, J. Appl. Phys. **95**, 6738 (2004).
- J.E.E. Baglin, *Science, Big Decisions, and the Average Person*, IUMRS Facets, Vol.3, no.2, 2 (2004), The International Union of Materials Research Societies, Pittsburgh, PA.

C.A. Merchant, J.S. Aitchison, S. Garcia-Bianco, C. Hnatovsky, R.S. Taylor, F. Agullo-Rueda, A.J. Kellock and J.E.E. Baglin, *Direct Observation of Waveguide Formation in KGd(WO₄)₂ by Low Dose H⁺ Ion Implantation*, Appl. Phys. Lett. **89**, 111116 (2006).

J.E.E. Baglin, *Book Review: Survival Skills for Scientists by F. Rosei and T. Johnston*, Materials Today **10** (7-8), 53 (2007).

J.E.E. Baglin, A.J. Kellock and J.E. Frommer, *Ion Beam Lithography for Nano-scale Pattern Features*, Mater. Res. Soc. Symp. Proc Vol. **1020**, GG02-03 (2007), pp. 39-47.

R. Allen, J.E.E. Baglin, Oun-Ho Park and Ho-Cheol Kim, *Ion Beam Patterning of Block Copolymer Thin Films*, J. Photopolymer Science and Technology, **22** (6), 755 - 760 (2009)