

Berend T. Jonker

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Birth Detroit, Michigan, USA 12 March 1955

Education

Calvin College, Grand Rapids, MI	B.A. Physics	1977
University of Maryland, Physics	M.S. Physics	1981
University of Maryland, Physics	Ph.D. Physics	1983

Academic Honors

Calvin Alumni Scholar	Calvin College	1973-74
State of Michigan Scholar	Calvin College	1973-77
Summa Cum Laude, Physics Honors	Calvin College	1977

Professional Experience

National Research Council Postdoctoral Associate at NRL	1/84 - 1/86
Consulting Physicist - Sachs/Freeman Associates	1/86 - 3/86
Research Physicist, Naval Research Laboratory, Wash. D.C.	3/86 - present
GS-12	3/86 - 12/87
GS-13	12/87 - 11/90
GS-14	11/90 - 1/99
GS-15 / Level IV	1/99 - 12/06
Section Head, Magneto-electronic Mater. & Devices Code 6361	9/03 - present
Senior Scientist (ST/SES), NRL	12/06 - present

Professional Society Membership

American Physical Society (APS)
American Vacuum Science & Technology Society (AVS)
American Association for the Advancement of Science (AAAS)

Professional Honors

Fellow – AVS Science & Technology Society	1998
Fellow – American Physical Society	2003
Fellow – American Assoc. Advancement of Science (AAAS)	2016
Dolores M. Etter Top Navy Scientist / Engineer	2008
Sigma Xi Award, Pure Science	2010
Presidential Rank Award – Meritorious Senior Professional	2011
E.O. Hulburt Award – NRL	2019

Publications: 258
Citations: 9310 (as of March 2019)
H-index: 45 (ISI Web of Science)

Invited Talks: 125
NRL press releases (PR):

NRL press release 49-07r	Spin injection into Silicon	2007
NRL press release 78-07r	Generation, Modulation and Electrical Detection of Pure Spin Currents in Silicon	2007
NRL press release 13-09r	Control of Spins in Quantum Dot Shells	2009
NRL press release 41-11r	Si Spintronics High Temp Milestone	2011
NRL press release 95-12r	Graphene Magnetic Tunnel Junction	2012
NRL press release 127-12r	Presidential Rank Award	2012
NRL press release 137-12r	Graphene-Silicon heterostructure	2012
NRL press release 11-13r	Monolayer MoS2 chemical sensor	2013
NRL press release 6-14r	Homoepitaxial graphene tunnel barriers	2014
NRL press release 27-14r	Electrical Det Spin-Momentum Locking	2014
NRL press release 56-15r	Spin Precession in Silicon Nanowires	2015
NRL press release 73-16r	Spin Filtering at Room Temp w Graphene	2016
NRL press release 01-17r	Novel Monolayer Ferroelectric Hybrids	2017
NRL press release 41-18r	Unique Interlayer State in vdW Heterostr	2018
NRL press release 42-18r	Development of New Monolayer Materials	2018
NRL press release 09-19r	Directly Write of Single Photon Emitters	2019
NRL press release 15-19r	Laser Processing of Optoelectronic Monolayers	2019

Awards

A. Berman Research Publication Award	NRL	1988, 91, 96, 97, 2000, 02, 07, 11, 12, 14, 16, 18, 19
Outstanding Performance Award	NRL	1987-2007
Special Act Award	NRL	2004
Patent Awards	NRL	3/88,4/88,6/93,12/98,2/99,11/00
JVST Shop Note Award	AVS	1991
NRL Review Outstanding Paper award	NRL	2003, 08, 15
NRL Technology Transfer Royalty Award	NRL	2004
Dolores M. Etter Top Scientist Award	Dept of Navy	2008
NRL Technology Transfer Royalty Award	NRL	2009
Sigma Xi Award, Pure Science		2010
Presidential Rank Award – Meritorious Senior Professional		2011
E.O. Hulburt Award – NRL		2019

Research Interests:

- molecular beam epitaxial growth of semiconductors, metals, and hybrid structures
- interface formation, structure, and electronic states
- magneto-electronics / semiconductor spintronics
- spin injection, transport, manipulation and detection in magnetic metal / semiconductor hybrid structures and all-semiconductor structures
- ferromagnetic semiconductors – magnetic ordering, MBE growth and characterization
- spin-dependent prototype device fabrication, including spin-LEDs and spin-RTDs
- interface formation and interfacial effects in spin injection and scattering

- surface science: surface magnetism, Auger and photoelectron diffraction studies of surface structure; thin film quantum size effects;
- magnetic metal multilayers: metastable magnetic phases; magnetic behavior of 2D-like layers; molecular beam epitaxy (MBE) growth of;
- topological insulators (bulk); spin-momentum locking
- 2D crystals beyond graphene (transition metal dichalcogenides, h-BN, etc)
- van der Waals heterostructures

Professional Activities

Guest Scientist - Inst. für Festkörperforschung der KFA (Jülich)	1985
Adjunct Professor,	State University of New York, June 1995 -
Professional Affiliations:	American Physical Society American Vacuum Society Materials Research Society
Invited Lecturer at the XXV Intl. School On Physics of Semiconducting Compounds, Jaszowiec, Poland, May 25-31, 1996	
Organized and established new Technical Group “Magnetic Interfaces and Nanostructures” within the American Vacuum Society,	October 1996.
Organized and established new Division “Magnetic Interfaces and Nanostructures” within the American Vacuum Society,	October 1999.
APS Focus Session coordinator, Magnetic Nanostructures	1999
Division Chair, AVS Magnetic Interfaces & Nanostructures	1999-2002
American Inst of Physics Steering Cmte, Magnetic Mater	Jan 2004 – Jan 2007
APS Focus Topic coordinator, Spin-dep. Phenom. Semicon.	2004
Co-Chair, SpinTech II, Brugge, Belgium	Aug 2003
Cmte Member, Emerging Research Devices & Materials: 2005 Intl Tech Roadmap for Semiconductors	2004-2006
Intl Advisory Cmte Member, SpinTech III, Hyogo, Japan	Aug 2005
Prog Cmte Member, 14 th Intl Conf on Crystal Growth, Grenoble	Aug 2004
Plenary Lecturer, 27 th International Conference on the Physics of Semiconducting Compounds (Flagstaff, USA)	2004
Intl Advisory Cmte, CIMTEC 2006, Sicily, Italy (Intl Conf on Modern Materials & Technologies)	June 2006
Intl Program Cmte, ICSI-5 2007, Marseilles, France (5 th Intl Conf on Si Epitaxy & Heterostructures)	May 2007
Cmte Member, Emerging Research Devices & Materials: Intl Tech Roadmap for Semiconductors (ITRS)	2007-08
Chair-Elect, APS GMAG Topical Group	2008
Cmte member / contributing author, ITRS – 2009 edition	2009
Intl Advisory Cmte, SpinTech V, Krakow, Poland	2009
Prog Cmte, Intl Symp Nanostructures & Nanodevices	2009
Program Chair, APS GMAG Topical Group	2009
Intl Prog Cmte, MBE Conf 2010, Berlin	2009-10
Intl Prog Cmte, PASPS-VI 2010, Tokyo	2009-10
Invited speaker at ONR World Class Science Series	2010
Chair, APS GMAG Topical Group	2010
Cmte member / contributing author, ITRS – 2011 edition	2011

Plenary Anniversary Speaker, Magnetic Interfaces	
Division, AVS International Symposium	2013
Cmte member / contributing author, ITRS – 2013 edition	2013
Prog cmte member / session organizer ISANN 2013	2013
Intl Prog cmte for ICPS 2014	2013-14
Intl Prog cmte for MORIS 2013	2013
US co-chair, Workshop on Innovative NanoDeviceS (WINDS)	2014
Cmte member, Naval S&T Strategic Plan update	2014
Editorial Board Member, Nature's <i>Scientific Reports</i>	2015 -
Intl Prog cmte for ICPS 2016	2015-16
Cmte member, Naval S&T Strategic Plan update	2016
Conference General Chair, WINDS 2016	2016
Conference US Co-Chair, WINDS 2017	2017
Conference US Co-Chair, WINDS 2018	2018
Workshop co-chair, Govt Workshop on 2D Materials	2017-20
AFOSR Topic Co-Chief Hybrid Materials Valley Optoelectronics	2020

Books Edited:

Growth, Characterization and Properties of Ultrathin Magnetic Films and Multilayers, vol. 151 Materials Research Society Symposium Proceedings, edited by B.T. Jonker, E.E. Marinero and J.P. Heremans (MRS, Pittsburgh, 1989).

Magnetic Ultrathin Films: Multilayers, Surfaces, Interfaces and Characterization, vol. 313 Materials Research Society Symposium Proceedings, edited by B.T. Jonker, S.A. Chambers, R.F.C. Farrow, C. Chappert, R. Clarke, W.J.M. deJonge, T. Egami, P. Grunberg, K. M. Krishnan, E.E. Marinero, C. Rau, and S. Tsunashima (MRS, Pittsburgh, 1993).

Book Chapters:

Electrical Spin Injection into Semiconductors: Progress Towards Semiconductor Spintronics, B.T. Jonker, in “Ultrathin Magnetic Structures IV: Applications of Nanomagnetism” (edited by J.A.C. Bland and B. Heinrich, Springer-Verlag, Berlin, 2005).

Electrical Spin Injection and Transport in Semiconductors, B.T. Jonker and M.E. Flatte, in “Nanomagnetism: Ultrathin Films, Multilayers and Nanostructures” (volume editors J.A.C. Bland and D.L. Mills; in the series “Contemporary Concepts of Condensed Matter Science,” series editors E.Burstein, M.L. Cohen, D.L. Mills and P.J. Stiles, Elsevier, 2006). ISBN 0-444-51680-8

Electrical Spin Injection and Transport in Semiconductors, B.T. Jonker in “Handbook of Spin Transport and Magnetism in Electronic Systems” (Chapter 17, pp 329-369, CRC Press – Taylor & Francis, 2012).

Electrical Spin Injection into InGaAs Quantum Dots, G. Kioseoglou, C.H. Li and B.T. Jonker in “Handbook of Spintronics” (edited by D. Awschalom, J. Nitta and Y. Xu, Springer, 2013). 13-1231-2702

Graphene as a Spin Polarized Tunnel Barrier, O.M.J. van ‘t Erve, E. Cobas, A.L. Friedman, C.H. Li, A.T. Hanbicki, J. Robinson and B.T. Jonker, in “Graphene Science Handbook” (in volume 5 “Size-dependent Properties” of a 6-volume set; CRC Press / Taylor & Francis, 2016). 13-1231-2357

Patents:

Method and device for magnetizing thin films by the use of injected Spin-polarized Current, Navy Case No. 70,708 (with G.A. Prinz and J.J. Krebs, Aug. 6, 1987). Awarded 18 April 1989, US Patent No. 4,823,177.

Passivating layer for III-V semiconductor materials, Navy Case No. 71,078 (with G.A. Prinz and J.J. Krebs, Feb. 29, 1988). Awarded 9 May 1989, US Patent No. 4,828,935.

Polarized optical emission due to decay or recombination of spin-polarized injected carriers, disclosure submitted 16 June 1992, acknowledged 9 July 1992. Filed June 30, 1993;

- Navy case No. 74,741. Awarded 23 February 1999, US Patent No. 5,874,749.
- Metal Passivating Layer for III-V Semiconductors, and Improved Gate Contact for III-V-based Metal-Insulator-Semiconductor (MIS) Devices; B.T. Jonker, O.J. Glembocki and R.T. Holm; disclosure submitted 8/11/97. Navy Case No. 78,650. Patent application filed 15 December 1998, granted 6/26/01, US Patent No. 6,252,262.
- Non-volatile, programmable logic circuits by combining negative differential devices and magnetic devices, B.T. Jonker and R. Magno. Navy case no. 79,905, and 80,248 foreign filing. Filed 15 June 2000; awarded 13 Nov 2001, US Patent No. 6,316,965.
- Chemical Vapor Sensors Using MoS₂, Carbon Nanotubes, Graphene, and Other Low-Dimensional Materials for a Full Spectrum Sensor, A.L. Friedman, F.K. Perkins, E. Cobas, P.M. Campbell, G.G. Jernigan and B.T. Jonker. Navy Case No. 102415 18 July 2013; US Patent No. 9,063,063 issued (23 June 2015).
- Graphene Spin Filters on Ferromagnetic Films via Chemical Vapor Deposition, Enrique Cobas, Olaf M.J. van 't Erve, Adam L. Friedman and Berend T. Jonker, submitted January 2014; Navy case number 102,849; approved for filing 16 May 2014.
- Process for forming homoepitaxial tunnel barriers with functionalized graphene-on-graphene for electronic device applications, Adam L. Friedman, Olaf M.J. van 't Erve, Connie H. Li, Jeremy T. Robinson, and Berend T. Jonker, submitted January, 2014; Navy case # 102970; approved for filing 16 May 2014; patent 102970-US2 issued 4 April 2017.
- Solid phase epitaxy of 3C-SiC on Si(001), C. H. Li, R. Goswami, G. G. Jernigan, C. S. Hellberg, and B.T. Jonker. Submitted Navy case # 103185 (2013). Issued 6 June 2017 # 9673047; 14/872308. Issued 16 June 2020 103185-US3.
- Method for direct electrical access to the current-induced spin polarization due to spin-momentum locking in topological insulators, C. H. Li, O. M. J. van 't Erve, J. T. Robinson, Y. Liu, L. Li, and B.T. Jonker. Navy case # 103190, filed 6 Nov 2015, awarded 20 Nov 2018; 10132880 – 14/934240.
- Method for an optical modulator using the spin Hall effect in metals, O.M.J. van 't Erve, A. T. Hanbicki, K. M. McCreary, C. H. Li, & B. T. Jonker. Navy case # 103,594 (2015; non-provisional patent 28 April 2016, patent awarded 27 Nov 2018; 10139655 – 15/140191. 12-1231-1113
- Magnetic field sensor using in situ solid source graphene and graphene induced anti-ferromagnetic coupling and spin filtering, O.M.J. van 't Erve, Enrique Cobas, Shu-Fan Cheng and Berend T. Jonker, Navy case # 103,631; filed 6 Nov 2015, issued 17 Feb 2017 # US 2017 / 0242083A1.
- Process for forming homoepitaxial tunnel barriers with hydrogenated graphene-on-graphene for room temperature electronic device applications, A.L. Friedman, O.M.J. van't Erve, J.T. Robinson, K.E. Whitener, Jr., and B.T. Jonker, Navy case # 103,730; filed 15 Sept 2016, approved 4 July 2017 #9698254, issued 11/13/18, 10128357 – 15/426119.

Two Dimensional Materials integrated with multiferroic layers: Tailoring properties of 2D materials by integrating with multiferroic layers, B.T. Jonker, Navy case # 104,148 – US2/WO1 (Sept 2016), provisional patent 62/424,711 filed 21 Nov 2017.

Lateral heterojunctions in 2D materials by integrating with multiferroic layers, B.T. Jonker, C.H. Li, K.M. McCreary and O.M.J. van 't Erve, Navy case # 104,205-US2/WO1 (July 2016), provisional patent 62/424,722 filed 21 Nov 2017.

Controlling structural phase transitions and properties of 2D materials by integrating with ferroelectric layers, B.T. Jonker, C.H. Li and K.M. McCreary, Navy case # 105,683-US1 (Jan 2017). US Patent No. 10,403,753 B2 (issued 3 Sept 2019).

A nano-indent process for creating single photon emitters in a two-dimensional materials platform, B.T. Jonker, M. Rosenberger, H.-S. Chuang, K. Dass and J. Hendrickson, Navy Case # 111452. Provisional application filed June 2019, patent filed 1 July 2020 # 16/919,024

Conferences chaired:

1989 Spring Meeting of the MRS, co-chair of the symposium on "Growth, Characterization and Properties of Ultrathin Magnetic Films and Multilayers", San Diego, CA, April 24-28 (1989).

1990 Local arrangements committee member for the Physical Electronics Conference, NIST, Washington, D.C.

1993 Spring Meeting of the MRS, co-chair of the symposium "Magnetic Ultrathin Films, Multilayers and Surfaces", San Francisco, CA, April 12-16 (1993).

1995 Fall Meeting of the MRS, Meeting co-chair, Boston, MA, Nov. 27 - Dec. 1 (1995).

1995 National Symposium of the American Vacuum Society, co-chair for Topical Conference on Magnetic Surfaces, Interfaces and Nanostructures, Minneapolis, MN, October 16-20 (1995).

1996 National Symposium of the American Vacuum Society, chair for Topical Conference on Magnetic Surfaces, Interfaces and Nanostructures, Philadelphia, PA, October 14-18 (1996).

1997 National Symposium of the American Vacuum Society, established and co-chaired new Technical Group: "Magnetic Interfaces and Nanostructures," San Jose, CA, Oct. 20-24, 1997.

1998 National Symposium of the American Vacuum Society, program chair for Technical Group: "Magnetic Interfaces and Nanostructures," Baltimore, MD, Oct. 12-16, 1998.

1999 March Meeting of the American Physical Society, Focus Session Coordinator for "Magnetic Nanostructures and Heterostructures," Atlanta, GA.

1999 International Symposium of the American Vacuum Society, program co-chair for Technical Group: "Magnetic Interfaces and Nanostructures," San Jose, CA, Oct. 25-29, 1999.

2000 International Symposium of the American Vacuum Society, program co-chair for AVS Division: "Magnetic Interfaces and Nanostructures," Boston, MA, Oct. 20-24, 2000.

2001 International Symposium of the American Vacuum Society, program co-chair for AVS

- Division: “Magnetic Interfaces and Nanostructures,” San Francisco, 29 Oct. – 2 Nov., 2001
- 2001 Spintronics, Washington DC, 9-11 August, Scientific Advisory Cmte.
- 2002 International Symposium of the American Vacuum Society, program chair for AVS
Division: “Magnetic Interfaces and Nanostructures,” Denver, 29 Oct. – 2 Nov., 2002
- 2003 Conference Co-chair of SpinTech II, Brugge, Belgium.
- 2004 Coordinator for Focus Session 6.11.5 “Spin-dependent Phenomena in Semiconductors” at the APS March 2004 Meeting.
- 2009 Program Chair for American Physical Society Topical Group in Magnetism, March 2010
- 2014 Workshop on Innovative Nanostructures & Devices (WINDS), US co-chair, Dec 2014
- 2016 Workshop on Innovative Nanostructures & Devices (WINDS), Chair, Dec 2016
- 2017 Workshop on Innovative Nanostructures & Devices (WINDS), US co-chair, Dec 2017
- 2018 1st Government Workshop on 2D Materials Beyond Graphene, Chair, July 2018
- 2018 Workshop on Innovative Nanostructures & Devices (WINDS), US co-chair, Dec 2018
- 2019 2nd Government Workshop on 2D Materials, co-chair, March 2019
- 2020 3rd Government Workshop on 2D Materials, co-chair, February 2020

INVITED PRESENTATIONS

Conferences and Workshops:

1. *Spin-polarized Photoemission Study of Epitaxial Fe(001) Films on Ag(001);* B.T. Jonker, G.A. Prinz, E. Kisker, K.H. Walker and C. Carbone. Presented at the 31st Annual Conference of Magnetism and Magnetic Materials, Baltimore, MD, Nov. 17-20, 1986.
2. *Spin-polarized Photoemission Study of Epitaxial Fe(001) Films on Ag(001);* B.T. Jonker. Presented at the Joint Annual Meeting of the Metallurgical Society for Metals and the American Institute for Mining and Metallurgical Engineers, Denver, CO, Feb. 23-24, 1987.
3. *Hyperfine Fields and Spin Orientations in (Fe⁵⁷/Ag) Superlattices From Conversion Electron Mossbauer Studies,* F.A. Volkening, B.T. Jonker, J.J. Krebs, N.C. Koon and G.A. Prinz. 32nd Annual Conference on Magnetism & Magnetic Materials, Chicago, IL, Nov. 9-12, 1987.
4. *Stoner Excitations in bcc Co;* Y.U. Idzerda, D.M. Lind, D.A. Papaconstantopoulos, G.A. Prinz, B.T. Jonker and J.J. Krebs. 4th Joint Magnetism & Magnetic Materials/Intermag Conference, Vancouver, British Columbia, July 12-15, 1988.
5. *MBE Growth and Characterization of Fe- and Co-Based Diluted Magnetic Semiconductors;* B.T. Jonker, J.J. Krebs and G.A. Prinz. 1989 Spring Meeting of the Materials Research Society, San Diego, CA, April 24-29, 1989.
6. *Fe- and Co-Based Wide-Gap Diluted Magnetic Semiconductors;* B.T. Jonker. 1989 March Meeting of the American Physical Society, St. Louis, MO, March 20-24, 1989.
7. *Spin Separation in Diluted Magnetic Semiconductor Quantum Well Systems;* B.T. Jonker. 35th Annual Conference on Magnetism and Magnetic Materials, San Diego, CA, Oct.29-Nov.1, 1990.
8. *Itinerancy and Exchange Stiffness: A Brillouin Scattering Study of bcc Cobalt;* J.M. Karanikas, R. Sooryakumar, B.T. Jonker and G.A. Prinz. 35th Annual Conference on Magnetism and Magnetic Materials, San Diego, CA, Oct. 29-Nov. 1, 1990.
9. *Heteroepitaxy of Magnetic Metal and Semiconductor Multilayer Systems;* B.T. Jonker, J.J. Krebs and G.A. Prinz. 1991 Spring Meeting of the Materials Research Society, Anaheim, CA, April 29 - May 3, 1991.
10. *Spin Dependent Effects in Thin Film Structures: A New Degree of Freedom;* B.T. Jonker. 1st International Conference on Processing Materials for Properties, Honolulu, HI, Nov. 7 - 10, 1993.

11. *Spin Dependent Confinement in DMS-Based Heterostructures*; A. Petrou, L.P. Fu, W.Y. Yu, S.T. Lee, B.T. Jonker and J. Warnock. 38th Annual Conference on Magnetism and Magnetic Materials, Minneapolis, MN, Nov. 15 - 18, 1993.
12. *Optical Transitions in $Zn_{1-x}Co_xSe$ and $Zn_{1-x}Fe_xSe$: Strong Concentration Dependent effective p-d Exchange*; C.L. Mak, R. Sooryakumar and B.T. Jonker. 38th Annual Conference on Magnetism and Magnetic Materials, Minneapolis, MN, Nov. 15 - 18, 1993.
13. *Interfacial Contributions to Magnetic Thin Film Anisotropy Arising From Epitaxial Growth Processes in Metal / Semiconductor Structures*, B.T. Jonker. SPIE International Symposium OE/LASE '94, Los Angeles, CA, Jan. 26-28, 1994.
14. *Competing Spin Exchange Interactions in Magnetic Semiconductor Spin Superlattices*; B.T. Jonker. 1994 March Meeting of the American Physical Society, Pittsburgh, PA, March 21-25, 1994.
15. *Excitons in Shallow Diluted Magnetic Semiconductor Quantum Wells; Metastability and the Reentrant Type I / Type II / Type I Transition*, J. Warnock, B.T. Jonker, H. Abad, W.Y. Yu, S.T. Lee, S. Stolz, and A. Petrou. 6th Joint MMM - Intermag conference, Albuquerque, NM, June 20-23, 1994.
16. *MBE Growth of Fe-based Ternary II-VI compounds and Heterostructures, and the Epitaxial Growth of Fe Films*, B.T. Jonker, H. Abad, J.J. Krebs, H.-Y. Wei, D. Prasad Beesabathina, L. Salamanca-Riba, L.P. Fu, W.Y. Yu and A. Petrou. European Workshop on II-VI Semiconductors, Linz, Austria, 26-28 September, 1994.
17. *Competing Spin Exchange Interactions in ZnFeSe / ZnMnSe Heterostructures*, B.T. Jonker, H. Abad, L.P. Fu, W.Y. Yu, A. Petrou, J. Warnock, C.D. Poweleit and L.M. Smith. International Workshop on Semimagnetic Semiconductors, Linz, Austria, 28-30 September 1994.
18. *Spin-Dependent Carrier Localization in Fe-based Semimagnetic Semiconductor Heterostructures*, Seventh Intl. Conf. on II-VI Compounds and Devices, Edinburgh, UK, 13-18 August 1995.
19. *Ordering in $Zn_{1-x}Fe_xSe$ Films Grown on InP and GaAs Substrates by MBE*, L. Salamanca-Riba, H.Y. Wei and B.T. Jonker; National Institute for Advanced Interdisciplinary Research, Tsukuba, Japan, September 1, 1995.
20. *Spin-Dependent Band Offsets and Quantum Confinement in ZnFeSe-based Heterostructures*, B.T. Jonker. XXV Intl. School On Physics of Semiconducting Compounds, Jaszowiec, Poland, May 25-31, 1996.
21. *Magnetic Anisotropy and Atomic Structure of the Fe/GaAs Interface*, E. Kneedler, B.T. Jonker, P.M. Thibado, L.J. Whitman and R.J. Wagner. International Symposium of the American Vacuum Society, San Jose, CA, October 20-24, 1997.

22. *Suppression of Midgap States and Enhanced Carrier Lifetimes in GaAs at a Magnetic Metal Interface*, B.T. Jonker, O.J. Glembocki, R.T. Holm and R.J. Wagner. 25th Conference on the Physics and Chemistry of Semiconductor Interfaces, Salt Lake City, UT, January 18-22, 1998.
23. *Interface Effects in Semiconductor Heterostructures: Spin Coherence, Lifetimes and Applications*, DARPA/ONR Workshop on Spintronic Heterostructures, Arlington, VA, January 5-6, 1999.
24. *The Ferromagnet / Semiconductor Interface: Status and Prospects for Spin Injection*, DARPA / JASON Briefing on Spintronics, La Jolla, CA, 13 July 1999.
25. *Electrical Spin Injection and Transport in Quantum Device Structures*, DARPA SPINS Conference, Santa Barbara, CA, 5-7 January, 2000.
26. *Electrical Spin Injection and Transport in Ferromagnet / Semiconductor Heterostructures*, 2000 AAAS Annual Meeting and Science Innovation Exposition, Washington, DC, 17-22 February, 2000.
27. *Electrical Spin Injection and Transport in Quantum Device Structures*, Nanoscience and Nanotechnology Symposium, Pacific Northwest National Laboratory, Richland, WA, 21-22 June 2000.
28. *Electrical Spin Injection and Transport in Semiconductor Heterostructures*, 47th Intl Symposium of the American Vacuum Society, Boston, MA, 2-6 October 2000.
29. *Robust Electrical Spin Injection into a Semiconductor Heterostructure*, B.T. Jonker, Y.D. Park, R.M. Stroud and B.R. Bennett, 8th Joint MMM-Intermag Conference, San Antonio, TX, 7-11 January 2001.
30. *Electrical Spin Injection and the spin-LED*, B.T. Jonker, Y.D. Park, R.M. Stroud, B.R. Bennett, G. Itskos, M. Furis and A. Petrou, Advanced Materials Research Institute Conference, New Orleans, LA, 21-23 February 2001.
31. *Efficient Electrical Spin Injection and Realization of the spin-LED*, B.T. Jonker, Y.D. Park, A. Hanbicki, R.M. Stroud, B.R. Bennett, G. Itskos, M. Furis, G. Kioseoglou and A. Petrou. 2001 Spring Meeting of the Materials Research Society, San Francisco, CA, 16-20 April 2001.
32. *Transmission Electron Microscopy Studies of ZnMnSe / AlGaAs / GaAs spin-LEDs*, R.M. Stroud, Y.D. Park, B.T. Jonker, B.R. Bennett, G. Itskos, M. Furis, G. Kioseoglou and A. Petrou. 2001 Spring Meeting of the Materials Research Society, San Francisco, CA, 16-20 April 2001.
33. *Hybrid Structures and Spin-Dependent Functionality in 6.1 Å Materials*, B.T. Jonker. Third Workshop on the Fabrication, Characterization and Applications of 6.1 Å Materials, Snowbird, UT. 31 July – 2 August 2001.

34. *Insights into Electrical Spin Injection from spin-LED Structures*, A.T. Hanbicki, B.T. Jonker, Y.D. Park, R.M. Stroud, B.R. Bennett, G. Itskos, M. Furis, G. Kioseoglou and A. Petrou, Electrochemical Society Conference , San Francisco, CA, 2-7 September 2001.
35. *Electrical Spin Injection from a Magnetic Schottky Tunnel Contact into a Semiconductor*, B.T. Jonker et al, The 29th Conference on the Physics and Chemistry of Semiconductor Interfaces, Santa Fe, NM, 6-10 January 2002
36. *Progress Towards Essential Components of a SpinS Technology*, B.T. Jonker et al., Advanced Materials Research Conference, New Orleans, LA, 6-8 February 2002.
37. *Electrical Spin Injection and Ferromagnetic Order in Semiconductors*, B.T. Jonker, A.T. Hanbicki, R.M. Stroud, A. Petukhov, G. Itskos, G. Kioseoglou and A. Petrou. 19th General Conference of the European Physical Society Meeting, Brighton, England, 7-11 April 2002.
38. *Electrical Spin Injection from a Magnetic Schottky Tunnel Contact into a Semiconductor*, B.T. Jonker, A.T. Hanbicki, G. Itskos, G. Kioseoglou and A. Petrou. Intermag 2002, Amsterdam, The Netherlands, 28 April – 2 May, 2002.
39. *Electrical Spin Injection into a Semiconductor Heterostructure*, B.T. Jonker, A.T. Hanbicki, G. Itskos, G. Kioseoglou and A. Petrou. Gordon Research Conference on Magnetic Nanostructures, Lucca, Italy, 12-17 May 2002.
40. *A Schottky tunnel barrier contact for electrical spin injection into a semiconductor* , B.T. Jonker, A.T. Hanbicki, G. Kioseoglou , G. Itskos, R. Mallory and A. Petrou. NATO Advanced Research Workshop on Frontiers of Spintronics and Optics in Semiconductors – a Symposium in honor of E.I. Rashba. Boston, MA, 20-22 June 2002.
41. *Ferromagnetic Semiconductors: New and Old*, B.T. Jonker, A.T. Hanbicki, Y.D. Park, S.C. Erwin, C.S. Hellberg, J.M. Sullivan, G. Kioseoglou, G. Itskos, R. Mallory and A. Petrou. The Conference on Physics and Applications of Spin Related Phenomena in Semiconductors, Wurzburg, Germany, 23-26 July 2002.
42. *Magnetoelectronics: Aspects of Electrical Spin Injection*, A.T. Hanbicki, B.T. Jonker, R.M. Stroud, A. Petukhov, G. Kioseoglou, G. Itskos and A. Petrou, Ninth Intl Conf on Composites Engineering, San Diego, CA, 1-6 July 2002.
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47. *Spin Polarized Electron Injection from Ferromagnetic Metals and Semiconductors*, Spring MRS Meeting, April 2003, San Francisco, CA.
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49. *Spin Polarized Electron Injection from Ferromagnetic Semiconductors and Metals*, International Workshop on Diluted Magnetic Semiconductors, June 12-14, 2003, Lyon, France.
50. *Semiconductor Spintronics: Promise, Issues and Prospects*, B.T. Jonker. Nanoscale Science and Technology Workshop 2003, September 22-23, 2003, Seattle, WA.
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53. *Electrical Spin Injection into Semiconductors from Ferromagnetic Metal and Semiconductor Contacts*, B.T. Jonker. International Conference on Nanospintronics Design and Realization ICNDR—2004, 23-28 May 2004, Kyoto, Japan.
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63. *Electrical Injection, Modulation and Detection of Spin Currents in Silicon in a Lateral Transport Geometry*, 15th Intl Mauterndorf Winterschool on Solid State Devices, 18-22 February 2008, Bad Hofgastein, Austria.
64. *Generation, Modulation and Electrical Detection of Spin Currents in Silicon in a Lateral Transport Geometry*, 2008 March Meeting of the American Physical Society, 10-14 March 2008, New Orleans, LA.
65. *Generation, Modulation and Electrical Detection of Spin Currents in Silicon in a Lateral Transport Geometry*, Nanomaterials for Defense Conf, 21-24 April 2008, Arlington, VA.
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67. *Generation, Modulation and Electrical Detection of Spin Currents in Silicon*, 75th Annual Meeting of the Southeastern Section of the American Physical Society, 30-31 October 2008, Raleigh, NC.
68. *Spin Currents in Silicon: Injection, Modulation and Electrical Detection*, PBH Meeting on Magnetism Meets Semiconductors, 4-8 January 2009, Koln, Germany.
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70. *Novel Oxide Ferromagnetic Semiconductors*, Emerging Research Materials for Spin Logic, International Technology Roadmap for Semiconductors meeting, 9 November 2008, Austin, TX.
 71. *Lateral Spin Transport in Silicon: Electrical Injection, Detection and Manipulation*, Workshop in New Frontiers in Spintronics, 4-7 May 2009, Jerusalem, Israel.
 72. *Generation, Manipulation and Electrical Detection of Spin Currents in Silicon*, 2009 Silicon Nanoelectronics Workshop, 13-14 June 2009, Kyoto, Japan.
 73. *Silicon Spintronics: Spin Injection, Modulation and Detection in Silicon*, 5th International School and Conference on Spintronics and Quantum Information Processing (SpinTechV), 7-11 July 2009, Krakow, Poland.
 74. *Opportunities for Spin-Based Logic*, DARPA Spin Logic Workshop, 23-24 July 2009, Jackson Hole, Wyoming.
 75. *Silicon Spintronics: Information Processing with Spin Currents in Silicon*, Advances in Magnetic Nanostructures, 4-9 October 2009, Vail, CO.
 76. *Silicon Spintronics: Spin Injection, Manipulation and Electrical Detection in Lateral Devices*, International Electron Devices Meeting, 7-9 Dec 2009, Baltimore, MD.
 77. *Silicon Spintronics: Generation, Manipulation and Electrical Detection of Pure Spin Currents in Lateral Devices*, 11th Joint MMM / Intermag Conference, 18-22 January 2010, Washington, DC.
 78. *Spin Transport in High and Low Spin-orbit semiconductors*, World University Network Conference on "Spintronic Materials and Devices," 21-23 June 2010, Beckman Institute, University of IL, Urbana-Champaign, IL.
 79. *Silicon Spintronics*, European Materials Research Society Meeting, 13-17 September 2010, Warsaw, Poland.
 80. *Silicon Spintronics: Optical and Electrical Detection of Spin Injection into Silicon*, Fall Materials Research Society Meeting, 29 November – 3 December, 2010, Boston, MA.
 81. *Silicon Spintronics: Electrical Injection and Detection of Spin Accumulation in Si to 500K*, Workshop on Innovative Devices and Systems (WINDS) 5-10 December 2010, Kohala Coast, HI.
 82. *Electrical Spin Injection and Detection in Si to 500K*, 38th Conference on the Physics and Chemistry of Semiconductor Interfaces, 16-20 January 2011, San Diego, CA.

83. *Silicon Spintronics: spin injection, precession and detection to 500 K*, CMOS Emerging Technologies, 15-17 June 2011, Whistler, British Columbia, Canada.
84. *Identification of Interface Exchange Bias in Fe/MgO(001) by Magnetic Second-Harmonic Generation*, International Symposium on Advanced Nanostructures and Nanodevices, 4-9 December 2011, Maui, HI.
85. *Silicon/germanium spintronics: spin accumulation and transport*, CMOS Emerging Technologies, 18-20 July 2012, Vancouver, British Columbia, Canada
86. *Graphene as a tunnel barrier: magnetic tunnel junctions and spin injection into silicon*, 2012 Workshop on Innovative Nanoscale Devices and Systems, 2-7 December 2012, Kohala Coast, HI.
87. *2D Materials at NRL: graphene as a tunnel barrier, and spin-valley coupling in monolayer MoS₂*, *Beyond Graphene Workshop: Advanced 2D electronic and optoelectronic crystals and devices for next generation applications*, 6-7 March 2013, Penn State University, State College, PA.
88. *Semiconductor Spintronics – new avenues and perspectives: graphene as a spin tunnel barrier*, American Vacuum Society International Symposium, Plenary Anniversary Speaker, 27 Oct – 1 Nov 2013, Long Beach, CA. 13-1231-3585
89. *Direct electrical detection of spin-momentum locking in the topological insulator Bi₂Se₃*, International Symposium on Advanced Nanodevices and Nanotechnology, 8-13 December 2013, Kohala Coast, HI.
90. *Electrical detection of charge-current-induced spin polarization due to spin-momentum locking in Bi₂Se₃*, 8th International Conference on Physics and Applications of Spin Phenomena in Solids (PASPS VIII), 28-31 July 2014, Washington, DC
91. *Spin injection from ferromagnetic metal / graphene contacts into silicon*, March Meeting of the American Physical Society, 3-7 March 2014, Denver, CO.
92. *Measurement of high exciton binding energy in monolayer WS₂ and WSe₂*, Workshop on Innovative Nanoscale Devices and Systems, 30 Nov - 5 December 2014, Kohala Coast, HI. 13-1231-3901 and 14-1231-1391
93. *Electrical detection of current-induced spin polarization due to spin-momentum locking in the topological insulator Bi₂Se₃*, March Meeting of the American Physical Society, 2-6 March 2015, San Antonio, TX. 14-1231-4102
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95. *Excitonic behavior in MX₂ monolayers*, US EU Workshop on 2D Layered Materials

and Devices, 22-24 April 2015, Arlington, VA.

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97. *Measurement of high exciton binding energy in monolayer WS₂ and WSe₂*, Carbonhagen 2015: 6th symposium on carbon and related nanomaterials, 13-14 August 2015, University of Copenhagen, Copenhagen, Denmark.
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99. *Electrical detection of current-induced spin polarization due to spin-momentum locking in the topological insulators Bi₂Se₃ and Sb₂Te₃*, SPIE Optics and Photonics Conference, 28 August – 1 Sept 2016, San Diego, CA.
100. *MRS Spring Meeting 2017*
101. *AFRL Spring 2017*
102. *SPIE Baltimore 2019*
103. *MRS Spring Meeting 2019*
104. *WINDS2019. Moire Superpotentials and Quantum Calligraphy of Single Photon Emitters in van der Waals Heterostructures*,
105. *Quantum Calligraphy of Single Photon Emitters in van der Waals Heterostructures*, MRS Fall Meeting 2020, virtual.
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Seminars and Colloquia:

1. *Low-Dimensional Magnetic Multilayers by Molecular Beam Epitaxy*; B.T. Jonker. Physics Dept. Colloquium, State University of New York at Buffalo, Buffalo, NY, Sept. 28, 1989.
2. *Spin Separation and Type I/Type II Behavior in the ZnSe/(Zn,Fe)Se Quantum Well System*; B.T. Jonker. Physics Dept. Colloquium, Ohio State University, Columbus, OH, October 12, 1989.
3. *Diluted Magnetic Semiconductors: Fe- and Co-Based Epilayers and Quantum Wells*, B.T. Jonker. Physics Dept. Colloquium, U.S. Army Harry Diamond Laboratory, Adelphi, MD, Feb. 7, 1990.

4. *Spin-Dependent Carrier Confinement in Diluted Magnetic Semiconductor Quantum Well Systems*; B.T. Jonker. IBM T.J. Watson Research Center, Yorktown Heights, NY, May 3, 1990.
5. *Spin Superlattice Formation in Diluted Magnetic Semiconductor Heterostructures*; B.T. Jonker. National Institute of Standards and Technology, Gaithersburg, MD, 25 February 1992.
6. *Spin-Dependent Carrier Localization and Chemical Ordering in $Zn_{1-x}Fe_xSe$ Heterostructures*, SUNY Buffalo, December 13, 1994.
7. *Spin-Dependent Carrier Localization in Fe-based Semimagnetic Semiconductor Heterostructures*, B.T. Jonker. Princeton University, December 4, 1995.
8. *Spin-Dependent Carrier Localization in Semimagnetic Semiconductor Heterostructures*, B.T. Jonker. University of Maryland, Dept of Materials & Nuc Eng., Dec. 13, 1996.
9. *Magnetic and Electronic Properties of Fe/GaAs(001) and the Role of Interfacial Structure*, B.T. Jonker.. Virginia Commonwealth University, Richmond, VA, April 11, 1997.
10. *Magnetic and Electronic Properties of Fe/GaAs(001) and the Role of Interfacial Structure*, B.T. Jonker. University of Delaware, Newark, DE, May 6, 1997.
11. *The Magnetic Metal / Semiconductor Interface: Status and Prospects for Spin Transport*, B.T. Jonker. University of Minnesota, Minneapolis, MN, March 2, 1999.
12. *Electrical Spin Injection and Transport in Quantum Device Structures*, B.T. Jonker, Princeton University, Princeton, NJ, 1 May 2000.
13. *Spin-Dependent Behavior in Quantum Device Structures*, B.T. Jonker, IBM Almaden Research Center, San Jose, CA, 3 November 2000.
14. *Spin-Dependent Behavior in Quantum Device Structures*, B.T. Jonker, National Institute of Standards and Technology, Gaithersburg, MD, 14 November 2000.
15. *Insights into Electrical Spin Injection from spin-LED Heterostructures*, B.T. Jonker, Department of Physics, State University of New York at Buffalo, Buffalo, NY. 22 March 2001.
16. *Electrical Spin Injection and Transport in Semiconductor spin-LED Heterostructures*, B.T. Jonker, Johns Hopkins University, 5 December 2001.
17. *Progress Towards the Essential Components of a SpinS Technology*, B.T. Jonker, University of South Florida, Tampa, FL, 22 February 2002.
18. *Spin Injection and Scattering in Semiconductor Heterostructures*, B.T. Jonker, George Washington University, Washington, DC, 6 February 2003.

19. *Electrical Spin Injection into Semiconductor Heterostructures from Magnetic Metal and Semiconductor Contacts*, B.T. Jonker, Laboratory for Physical Sciences, University of Maryland, College Park, MD, 9 April 2003.
20. *Semiconductor Spintronics: Electrical Spin Injection into Semiconductor Heterostructures*, B.T. Jonker, Hewlett-Packard Advanced Materials and Processes Laboratory, Corvallis, OR, 8 April 2004.
21. *Semiconductor Spintronics: Electrical Spin Injection into Semiconductor Heterostructures*, B.T. Jonker, Ohio State University, Columbus, OH, 9 March 2006.
22. *Electrical Spin Injection into Silicon*, B.T. Jonker, Ohio State University, Columbus, OH, 25 October 2007.
23. *Generation, Modulation and Electrical Detection of Spin Currents in Silicon in a Lateral Transport Geometry*, Princeton University, 24 March 2008, Princeton, NJ.
24. *Generation, Modulation and Electrical Detection of Spin Currents in Silicon in a Lateral Transport Geometry*, State University of New York at Albany, 4 April 2008, Albany, NY.
25. *Spin Currents in Silicon: Injection, Modulation and Electrical Detection*, University of Maryland, 17 October 2008, College Park, MD.
26. *Silicon Spintronics: Spin Injection, Manipulation and Electrical Detection in Lateral Devices*, NIST Gaithersburg, 4 November 2009, Gaithersburg, MD.
27. *Semiconductor Spintronics: Generation, Manipulation and Detection of Spin Currents*, Office of Naval Research World Class Science Series, 27 April 2010 Arlington, VA.
28. *Silicon Spintronics: Generation, Modulation and Electrical Detection of Spin Currents in Lateral Devices*, California Nanosystems Institute, UCLA, Nov 9, 2010, Los Angeles, CA.

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2. Quantum Size Effect in Electron Transmission through Cu and Ag Films on W(110), B.T. Jonker, N.C. Bartelt and R.L. Park. *Surface Sci.* 127, 183 (1983).
3. Thin Film Quantum Size Effects: I. The Effect of Defect Structure at the Vacuum/Film Interface, B.T. Jonker and R.L. Park. *Surface Sci.* 146, 93 (1984).
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5. Interfacial Effects in Electron Transmission through Ag Films on Cu(111), B.T. Jonker and R.L. Park. *Solid State Comm.* 51, 871 (1984).
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