

Curriculum Vitae
MARGARET DOBROWOLSKA

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Education

1967-1972 Warsaw University, Warsaw, Poland; M.S. (Physics)
1975-1979 Institute of Physics, Polish Academy of Sciences, Warsaw, Poland;
Ph.D. (Condensed Matter Physics). Ph.D. Thesis “Interband Magneto-absorption in
Zero-gap Semiconductors,” Polish Academy of Sciences, Warsaw, 1979
(unpublished).

Employment History

1. 1979-1981 Post-Doctoral Research Associate, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland
2. 1981-1983 Post-Doctoral Research Associate, Physics Department, Purdue University, West Lafayette, Indiana
3. 1983-1985 Assistant Professor, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland
4. 1985-1987 Post-Doctoral Research Associate, Physics Department, Purdue University, West Lafayette, Indiana
5. 1987-1988 Post-Doctoral Research Associate, Physics Department, University of Notre Dame, Notre Dame, Indiana
6. 1988-1989 Assistant Faculty Fellow, Physics Department, University of Notre Dame, Notre Dame, I
7. 1989-1993 Assistant Professor, Physics Department, University of Notre Dame, Notre Dame, Indiana.
8. 1993-1999 Associate Professor, Physics Department, University of Notre Dame, Notre Dame, Indiana.
9. 1999-present: Professor, Physics Department, University of Notre Dame, Notre Dame, Indiana.
10. 2002-2006 Associate Chair and Director of Undergraduate Studies, Physics Department, University of Notre Dame, Notre Dame, Indiana.
11. 2013-present: Associate Dean, College of Science, University of Notre Dame, Notre Dame, Indiana.

Distinctions, Honors, Awards

Fellow, American Physical Society
National Science Foundation Creativity Award 1995-1997 (\$200,000)
Kaneb Teaching Award (2005)
Fellow, American Association for the Advancement of Science
Rev. Joyce Award for Excellence in Undergraduate Teaching, Notre Dame (2008)
Shilts/Leonard Teaching Award in the College of Science (2010)

Professional Memberships

American Physical Society
American Association for the Advancement of Science

Scientific Interests

1. Band structure, optical, and electrical properties of narrow-gap semiconductors, including Hg-based alloys.
2. Band structure, optical, electrical, and magnetic properties of diluted magnetic semiconductors.
3. Spectroscopy of impurities and defects in II-VI semiconductor compounds.
4. Spin resonance of conduction and bound electrons in semiconductors.
5. Spectroscopy of II-VI semiconductor heterostructures, including diluted magnetic semiconductor heterostructures.
6. Impurity conduction, localization, and metal-insulator transition in semiconductors.
7. Magneto-optical sensors and non-reciprocal devices based on diluted magnetic semiconductors.
8. Spintronics and spintronic devices

Refereed Publications

1. "Interband Magnetoabsorption in HgSe and Hg_{0.985}Cd_{0.015}Se," Y. Guldner, C. Rigaux, M. Dobrowolska, A. Mycielski, and W. Dobrowolski, Proc. 3rd Int. Conf. on the Physics of Narrow Gap Semiconductors, Warsaw, 1977. Polish Scientific Publishers, p. 87.
2. "Magneto-optical Study of HgTe Band Structure as a Function of Temperature," M. Dobrowolska, A. Mycielski, and W. Dobrowolski, Proc. VII Conf. on the Physics of Semiconducting Compounds, Jaszowiec, Poland, 1977, published by the Institute of Physics, Polish Academy of Sciences, Warsaw, 1978, p. 231.
3. "Determination of the Temperature Dependence of the Energy Gap in HgTe by Oscillatory Magnetotransmission Measurements," M. Dobrowolska, A. Mycielski, and W. Dobrowolski, Solid State Comm. 27, 1233 (1978).
4. "Thermo-Oscillations of Magnetoresistance in Hg_{1-x}MnxTe," M. Dobrowolska, W. Dobrowolski, R.R. Galazka, and J. Kossut, Solid State Comm. 28, 25 (1979).
5. "Temperature Study of Interband Magnetoabsorption in HgSe," M. Dobrowolska, W. Dobrowolski, and A. Mycielski, Solid State Comm. 34, 441 (1980).
6. "The Relation Between Magneto-optical and Magnetic Properties of Hg_{1-x}MnxTe and Hg_{1-x}MnxSe," M. Dobrowolska, W. Dobrowolski, M. Otto, T. Dietl, and R.R. Galazka, Proc. 15th Int. Conf. on the Physics Semiconductors, Kyoto, p. 815 (1980).
7. "Interband Magneto-optical Studies on the Semimagnetic Semiconductor Hg_{1-x}MnxSe," M. Dobrowolska, W. Dobrowolski, R.R. Galazka, and A. Mycielski, Phys. Stat. Sol. (b) 105, 477, (1981).
8. "Temperature Study of Interband Magnetoabsorption in Hg_{1-x}MnxTe Mixed Crystals," M. Dobrowolska and W. Dobrowolski, J. Phys. C. 14, 5689 (1981).
9. "Temperature Study of Magnetoabsorption in Hg_{1-x}MnxTe," M. Dobrowolska, W. Dobrowolski, and A. Mycielski, Proc. IX Conf. on the Physics of Semicond. Compounds, Jaszowiec, Poland, 1979, published by the Institute of Physics, Polish Academy of Sciences, Warsaw, 1981, p.14.
10. "Shubinkow de Haas effect and Interband Magnetoabsorption in Hg_{1-x}MnxSex," S. Takeyama, M. Dobrowolska, R.R. Galazka, W. Dobrowolski, and A. Mycielski, Proc. IX Conf. on the Physics of Semicond. Compounds, Jaszowiec,

- Poland, 1979, published by the Institute of Physics, Polish Academy of Sciences, Warsaw, 1981, p. 20.
11. "Band Structure of $\text{Hg}_{1-x}\text{Cd}_x\text{Se}$ and $\text{Hg}_x\text{S}_{1-x}\text{Se}$ Determined from Interband π - π^* Magnetoabsorption," A. Mycielski, M. Dobrowolska, and W. Dobrowolski, Proc. X Conf. on the Physics of Semicond. Compounds, Jaszowiec, Poland, 1980, published by the Institute of Physics, Polish Academy of Sciences, Warsaw, 1981, p. 176.
 12. "Magnetic and Magneto-optical Properties of $\text{Hg}_{1-x}\text{Mn}_x\text{Te}$ and $\text{Hg}_{1-x}\text{Mn}_x\text{Se}$," M. Otto, T. Dietl, A. Mycielski, M. Dobrowolska, and W. Dobrowolski, Proc. X Conf. on the Physics of Semicond. Compounds, Jaszowiec, Poland, 1980, published by the Institute of Physics, Polish Academy of Sciences, Warsaw, 1981, p. 225.
 13. "Electric-Dipole Spin Resonance of Bound Electronic States in $\text{Cd}_{1-x}\text{Mn}_x\text{Se}$," M. Dobrowolska, H.D. Drew, J.K. Furdyna, T. Ichiguchi, A. Witowski, and P.A. Wolff, Phys. Rev. Lett. 49, 845 (1982).
 14. "Band Structure of HgSe and Mixed Crystals $\text{Hg}_{1-x}\text{Cd}_x\text{Se}$ and $\text{Hg}_x\text{S}_{1-x}\text{Se}$ from the Interband Magnetoabsorption," A. Mycielski, J. Kossut, M. Dobrowolska, and W. Dobrowolski, J. Phys. C 15, 3293 (1982).
 15. "Peculiarities of the Band Structure of HgSe and Mixed Crystals $\text{Hg}_{1-x}\text{Cd}_x\text{Se}$ from the Interband Magnetoabsorption," A. Mycielski, J. Kossut, M. Dobrowolska, and W. Dobrowolski, Proc. XI Conf. on the Physics of Semicond. Compounds, Jaszowiec, Poland, 1981, published by the Institute of Physics, Polish Academy of Sciences, Warsaw, 1982, p. 122.
 16. "Effects of Photon-Momentum and Magnetic-Field Reversal on the Far-Infrared Electric-Dipole Spin Resonance in InSb ," M. Dobrowolska, Y. Chen, J.K. Furdyna, and S. Rodriguez, Phys. Rev. Lett. 51, 134 (1983).
 17. "Far-Infrared Observation of the Electric-Dipole Spin Resonance of Donor Electrons in $\text{Cd}_{1-x}\text{Mn}_x\text{Se}$," M. Dobrowolska, A. Witowski, J.K. Furdyna, T. Ichiguchi, H.D. Drew, and P.A. Wolff, Phys. Rev. B29, 6652 (1984).
 18. "Interference of Electric-Dipole and Magnetic-Dipole Interactions in Conduction-Electron-Spin Resonance in InSb ," Y.-F. Chen, M. Dobrowolska, J.K. Furdyna, and S. Rodriguez, Phys. Rev. B32, 89 (1985).
 19. "g-factor Anisotropy of Conduction Electrons in InSb ," Y.-F. Chen, M. Dobrowolska, and J.K. Furdyna, Phys. Rev. B31, 7989 (1985).
 20. "Spin Splitting of the Conduction Band of InSb Along $[110]$," M. Cardona, N.E. Christensen, M. Dobrowolska, J.K. Furdyna, and S. Rodriguez, Solid State Comm. 60, 17 (1986).
 21. "Location of the $\text{Fe}^{2+}(3d^6)$ Donor in the Band Structure of Mixed Crystals $\text{Hg}_{1-x}\text{Cd}_x\text{Se}$," A. Mycielski, P. Dzwonkowski, B. Kowalski, B.A. Orlowski, M. Dobrowolska, M. Arciszewska, W. Dobrowolski, and J.M. Baranowski, Acta Physica Polonica A69, 989 (1986).
 22. "Location of the $\text{Fe}^{2+}(3d^6)$ donor in the band structure of mixed crystals $\text{Hg}_{1-x}\text{Cd}_x\text{Se}$," A. Mycielski, P. Dzwonkowski, B. Kowalski, B.A. Orlowski, M. Dobrowolska, M. Arciszewska, W. Dobrowolski, and J.M. Baranowski, J. Phys. C 19, 3605 (1986).
 23. "Position of $\text{Fe}^{2+}(3d^6)$ Level in $\text{Hg}_{1-x}\text{Cd}_x\text{Se}$," M. Arciszewska, A. Mycielski, M. Dobrowolska, W. Dobrowolski, J.M. Baranowski, T. Warminski, B. Witkowska, and U. Blinowska Acta Physica Polonica A69, 989 (1986).

24. "Theoretical and Experimental Investigation of the Effective g-factor of Donor-Bound Electrons in InSb," Z. Barticevic, M. Dobrowolska, J.K. Furdyna, L.R. Ram Mohan, and S. Rodriguez, *Phys. Rev. B* 35, 7464 (1987).
25. "Far-Infrared Magnetoabsorption in HgTe epitaxial layers," H. Luo, M. Dobrowolska, Z. Yang, J.K. Furdyna, K.A. Harris, J.W. Cook, Jr., and J.F. Schetzina, *J. Vac. Sci. Technol. A* 5(5), 3115 (1987).
26. "Far-Infrared Magnetoabsorption in HgTe-CdTe and Hg_{1-x}MnxTe-HgTe Superlattices," M. Dobrowolska, Z. Yang, H. Luo, J.K. Furdyna, K.A. Harris, J.W. Cook, Jr., and J.F. Schetzina, *J. Vac. Sci. Technol. A* 5(5), 3089 (1987).
27. "Far-Infrared Magnetoabsorption in HgTe-CdTe and Hg_{1-x}MnxTe/HgTe Superlattice," Z. Yang, M. Dobrowolska, H. Luo, J.K. Furdyna, K.A. Harris, J.W. Cook, Jr., and J.F. Schetzina, *Mat. Res. Soc. Symp. Proc. Vol. 89*, p. 261 (1987).
28. "Inversion-Asymmetry-Induced Magneto-optical Transitions in HgTe/CdTe Superlattices," Z. Yang, M. Dobrowolska, H. Luo, J.K. Furdyna, and J.T. Cheung, *Phys. Rev. B* 38, 3409 (1988).
29. "Determination of the Valence Band Offset at a HgTe/CdTe Heterojunction by Magneto-Optics," Z. Yang, M. Dobrowolska, H. Luo, J.K. Furdyna, K.A. Harris, J.W. Cook, Jr., and J.F. Schetzina, *Superlatt. M.*, 4, 559 (1988).
30. "Far Infrared Magneto-optical Study of Holes and Electrons in Zero-Gap HgTe/CdTe Superlattices," M. Dobrowolska, T. Wojtowicz, J.K. Furdyna, O.K. Wu, J.R. Meyer, C.A. Hoffman and F.J. Bartoli, *Semiconductor Science and Technology* 5, S103 (1990).
31. "Far infrared determination of cyclotron and plasma-shifted-cyclotron resonances in thin MBE-grown films of alpha-Sn," T. Wojtowicz, M. Dobrowolska, J.K. Furdyna, and G. Yang, *Semiconductor Science and Technology* 5, S248 (1990).
32. "Far infrared studies of shallow acceptors in p-type HgMnTe," T. Wojtowicz, M. Dobrowolska, and J.K. Furdyna, *Semiconductor Science and Technology* 5, S290 (1990).
33. "Far infrared spin resonance in narrow gap semiconductors," M. Dobrowolska, *Semiconductor Science and Technology* 5, S159 (1990).
34. "Far infrared magneto-optical study of Hg_{1-x}CdxTe superlattices with graded composition," Z. Yang, M. Dobrowolska, H. Luo, J.K. Furdyna, J.T. Cheung and N. Otsuka, *Appl. Phys. Lett.* 55 (4), 380 (1989).
35. "Far infrared magneto-optical study of holes and electrons in zero-gap HgTe/Cd_{0.85}Hg_{0.15}Te superlattices," M. Dobrowolska, T. Wojtowicz, H. Luo, J.K. Furdyna, O.K. Wu, J.N. Schulman, J.R. Meyer, C.A. Hoffman and F.J. Baroli, *Phys. Rev. B* 41, 5084 (1990).
36. "Higher order electron cyclotron resonances in n-type HgTe - CdTe superlattices," M. Dobrowolska, T. Wojtowicz, J.K. Furdyna, J.R. Meyer, R.D. Feldman, R.F. Austin and L.R. Ram-Mohan, *Appl. Phys. Lett.* 57, 1781 (1990).
37. "Magneto-optical properties of HgTe - CdTe superlattices," J.R. Meyer, R.J. Wagner, F.J. Bartoli, C.A. Hoffman, M. Dobrowolska, T. Wojtowicz, J.K. Furdyna and L.R. Ram-Mohan, *Phys. Rev. B* 42, 9050 (1990).
38. Magneto-optical Resonances in HgTe-CdTe Superlattices, J. R. Meyer, F. J. Bartoli, C. A. Hoffman, M. Dobrowolska, T. Wojtowicz, J. K. Furdyna, And L. R. Ram Mohan, *Proc.*

- 20th International Conference on the Physics of Semiconductors, Thessaloniki, Greece, ed. by E. M. Anastassakis and J. D. Joannopoulos, p. 1170 (1990).
39. "Molecular Beam Epitaxy of a Low-Strain II-VI Heterostructure: ZnTe/CdSe," H. Luo, N. Sumatra, F.C. Zhang, A. Pareek, M. Dobrowolska, J.K. Furdyna, K. Mahalingam, N. Otsuka, W.C. Chou, A. Petrou and S.B. Qadri, *Appl. Phys. Lett.* 58, 1783 (1991).
 40. "Magnetic Activation of Bipolar Plasmas in HgTe-CdTe Superlattices," J.R. Meyer, C.A. Hoffman, F.J. Bartoli, T. Wojtowicz, M. Dobrowolska, J.K. Furdyna, X. Chu, J.P. Faurie and L.R. Ram-Mohan, *Phys. Rev. B* 44, 3455 (1991).
 41. "Spin Superlattice Formation in ZnSe/ZnMnSe Multilayers," N. Dai, H. Luo, F.C. Zhang, N. Samarth, M. Dobrowolska, and J.K. Furdyna, *Phys. Rev. Lett.* 67, 3824 (1991).
 42. "Far-Infrared Magneto-Optical Studies of HgTe-CdTe Superlattices in the Semimetallic Regime," T. Wojtowicz, M. Dobrowolska, J.K. Furdyna, J.R. Meyer, F.J. Bartoli, C.A. Hoffman, and L.R. Ram-Mohan, *Acta Physica Polonica A* 80, 245 (1991).
 43. "Persistent Spin Resonance of Donor Electrons and Hopping Magnetoconductivity in Cd_{1-x}Mn_xTe_{1-y}Se_y," T. Wojtowicz, N. Semaltianos, P. Klosowski, M. Dobrowolska, J.K. Furdyna, and I. Miotkowski, *Acta Physics Polonica A* 80, 287 (1991).
 44. "New Low-Strain II-VI Superlattices: ZnTe/CdSe and ZnTe/Cd_{1-x}Mn_xSe," N. Samarth, H. Luo, A. Pareek, F.C. Zhang, M. Dobrowolska, J.K. Furdyna, W.C. Chou, A. Petrou, K. Mahalingam and N. Otsuka, *Journal Vac. Sci. Tech.* B10(2), 915 (1992).
 45. "Magnetic Generation of Electrons and Holes in Semimetallic HgTe-CdTe Superlattices," J.R. Meyer, C.A. Hoftman, F.J. Bartoli, T. Wojtowicz, M. Dobrowolska, J.K. Furdyna, X. Chu, J.P. Faurie and L.R. Ram-Mohan, *J. Vac. Sci. Technol.* B10(4), 1582 (1992).
 46. "Observation of Localized Above-Barrier Excitons in Type-I Superlattices," F.C. Zhang, N. Dai, H. Luo, N. Samarth, M. Dobrowolska, J.K. Furdyna, and L.R. Ram-Mohan, *Phys. Rev. Lett.* 68, 3220 (1992).
 47. "Observation of Type-I Excitons and Related Confinement Effects in Type-II Superlattices," F.C. Zhang, H. Luo, N. Dai, N. Samarth, M. Dobrowolska, and J.K. Furdyna, *Phys. Rev. B* 47, 3806 (1993).
 48. "Observation of Quasi-Bound States in Semiconductor Single Quantum Barriers," H. Luo, N. Dai, F.C. Zhang, N. Samarth, M. Dobrowolska, and J.K. Furdyna, *Phys. Rev. Lett.* 70, 1307 (1993).
 49. "Ternary II-VI Semiconductors," M. Dobrowolska, J.K. Furdyna, and H. Luo in *Encyclopedia of Advanced Materials*, Pergamon Press, S. Mahajan, ed., p. 2790 (1994).
 50. "Growth and Characterization of Digital Alloy Quantum Wells of CdSe/ZnSe," H. Luo, N. Samarth, A. Yin, A. Pareek, M. Dobrowolska, J.K. Furdyna, K. Mahalingam, N. Otsuka, F.C. Peiris, and J.R. Buschert, *Journal of Electronic Materials* 22, 467 (1993).
 51. "An optical method for evaluations of the net acceptor concentration in p-type

- ZnSe,” B. Hu, A. Yin, G. Karczewski, H. Luo, S.W. Short, N. Samarth, M. Dobrowolska, and J.K. Furdyna, *J. Appl. Phys.* 74, 4153 (1993).
52. “Diluted magnetic semiconductors as a tool for wave function mapping in semiconductor heterostructures,” M. Dobrowolska and H. Luo, *Journal of Luminescence* 60 and 61, 308 (1994).
 53. “Migration enhanced epitaxy and optical properties of CdSe/ZnSe digital alloy quantum wells,” S.W. Short, H. Luo, A. Yin, A. Pareek, M. Dobrowolska, and J.K. Furdyna, *J. Vac. Sci. Technol.* B12, 1143 (1994).
 54. “Zeeman-tuning of heterostructures consisting of semimagnetic and non-magnetic semiconductors,” J.K. Furdyna, H. Luo, and M. Dobrowolska, *The Proceedings of the 9th International Conference on Ternary and Multinary Compounds* (Yokohama, Japan).
 55. “Observation at above-barrier transitions in superlattices with small magnetically induced band offsets,” N. Dai, L.R. Ram-Mohan, H. Luo, G.L. Yang, F.C. Zhang, M. Dobrowolska, and J.K. Furdyna, *Phys. Rev.* B50, 18153 (1994).
 56. *Electroluminescence from Novel Porous Silicon P-N-Junction Devices*, J. Qi, D. C. Diaz, H. Guan, B. Das, A. Yin, and M. Dobrowolska, in *Conf. on Design, Simulation, and Fabrication of Optoelectronic Devices and Circuits*, ed. by M. N. Armenise, *Book Series: Proceedings of the Society of Photo-Optical Instrumentation Engineers (SPIE)*, Vol. 2150, pp. 96-105 (1994)
 57. *DX-Like Centers in II-VI Diluted Magnetic Semiconductors*, T. Wojtowicz, G. Karczewski, N. G. Semaltianos, S. Kolesnik, I. Miotkowski, M. Dobrowolska, and J. K. Furdyna, *Proceedings of the 17th International Conference on Defects in Semiconductors*, Gmunden, Austria, ed. by H. Heinrich and W. Jantsch, *Book Series Materials Science Forum*, pp. 1203-1208 (1994).
 58. “Semiconductors, Diluted Magnetic,” J.K. Furdyna, M. Dobrowolska, and H. Luo, *Encyclopedia of Applied Physics*, G.L. Trigg, ed., American Institute of Physics.
 59. “Optical Properties of Diluted Magnetic Semiconductor Quantum Structures,” M. Dobrowolska, H. Luo and J.K. Furdyna, *Acta Physica Polonica* A87, 95 (1995).
 60. “Quantum-confined stark effect in ZnSe/Zn_{1-x}Cd_xSe quantum wells,” S.W. Short, S.H. Xin, A. Yin, H. Luo, M. Dobrowolska, and J.K. Furdyna, *Appl. Phys. Lett.* 67, 503 (1995).
 61. “Quasilocalization of above barrier states in diluted magnetic semiconductor heterostructures,” H. Luo, M. Dobrowolska, and J.K. Furdyna, *Materials Science Forum* 182-184, 607 (1995).
 62. *Photoluminescence of Donor-Doped Znse Films Grown by Molecular-Beam Epitaxy*, G. Karczewski, B. Hu, A. Yin, H. Luo, M. Dobrowolska, And J. K. Furdyna, *Acta Physica Polonica A* 87, 245 (1995).
 63. “High Quality CdTe/Cd_{1-x}Mg_xTe Quantum Wells Grown on GaAs (100) and (111) Substrates by Molecular Beam Epitaxy,” S.H. Xin, B.H. Hu, S.W. Short, U. Bindley, A. Yin, M. Dobrowolska, and J.K. Furdyna, *J. Vac. Sci. Technol.*, B14, 2374 (1996).
 64. “Observation of the quantum confined Stark effect in ZnSe/ZnCdSe single quantum well systems,” S.W. Short, S.H. Xin, A. Yin, H. Luo, M. Dobrowolska, and J.K. Furdyna, *J. Elect. Mat.* 25, 253 (1996).
 65. “Behavior of Above-Barrier Subbands in Semiconductor Superlattices,” Y. Xuan,

- H. Luo, F.C. Zhang, M. Dobrowolska, J.K. Furdyna, and L.R. Ram-Mohan, submitted to *Physica Status Solidi*.
66. "Formation of Self-Assembling CdSe Quantum Dots on ZnSe by Molecular Beam Epitaxy," S.H. Xin, P.D. Wang, A. Yin, M. Dobrowolska, J.L. Merz, and J.K. Furdyna, *Appl. Phys. Lett.* 69, 3884 (1996).
 67. "Magneto-optical study of inter-well coupling in double quantum wells using diluted magnetic semiconductors," S. Lee, M. Dobrowolska, J.K. Furdyna, H. Luo, and L.R. Ram-Mohan, *Phys. Rev. B* 54, 16939 (1996).
 68. "Excitons in Very Shallow Quantum Wells," J. Kossut, J.K. Furdyna, and M. Dobrowolska, *Phys. Rev. B* 56, 9775 (1997).
 69. "Non-Saturating Giant Zeeman Shift and Anomalous PL Intensity in $Zn_{1-x}MnxSe$ at High Magnetic Fields," T. Schmiedel, A. Pareek, S. Lee, M. Dobrowolska, and J.K. Furdyna, *Proceedings of the 12th International Conference on the Application of High Magnetic Fields in Semiconductor Physics*, Wuerzburg, 1996.
 70. "Self-assembled growth of II-VI Quantum Dots," J.K. Furdyna, S. Lee, I. Daruka, C.S. Kim, A.-L. Barabasi, M. Dobrowolska, and J.L. Merz, *Nonlinear Optics* 18, 85 (1997).
 71. "Magnetoexcitons and Landau level in strained ZnSe and ZnTe layers," S. Lee, F. Michl, U. Rössler, M. Dobrowolska, and J.K. Furdyna, *Journal of Crystal Growth*, 184/185, 1105 (1998).
 72. "Magnetoluminescence Study of a Two-Dimensional Electron Gas Confined in Diluted Magnetic Semiconductor Quantum Wells," M.S. Salib, G. Kioseoglou, H.C. Chang, H. Luo, A. Petrou, M. Dobrowolska, J.K. Furdyna, and A. Twardowski, *Phys. Rev. B* 57, 6278 (1998).
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 74. "Micro-Photoluminescence of Self-Assembled Quantum Dots in CdSe/ZnSe Structures," J.C. Kim, M. Rho, L.M. Smith, H.E. Jackson, S. Lee, M. Dobrowolska, J.L. Merz, and J.K. Furdyna, *Proceedings of the 24th International Conference on the Physics of Semiconductors*, Jerusalem, 1998 (World Scientific, Singapore).
 75. "Spectroscopic characterization of the evolution of self-assembled CdSe quantum dots," J.C. Kim, H. Rho, L.M. Smith, H.E. Jackson, S. Lee, M. Dobrowolska, J.L. Merz, and J.K. Furdyna, *Applied Physics Letters* 73, 3399 (1998).
 76. "Wave function mapping in multiple quantum wells using diluted magnetic semiconductors," S. Lee, M. Dobrowolska, J.K. Furdyna, and L.R. Ram-Mohan, *Phys. Rev. B* 59, 10302 (1999).
 77. "Temperature-Dependent Micro-Photoluminescence of Individual CdSe Self-Assembled Quantum Dots," J.C. Kim, H. Rho, L.M. Smith, H.E. Jackson, S. Lee, M. Dobrowolska, and J.K. Furdyna, *App. Phys. Lett.* 75, 214 (1999).
 78. "Quantum dot exciton dynamics through a nano-aperture: Evidence for two different confined states," L.M. Robinson, J.C. Kim, H. Rho, H.E. Jackson, L.M. Smith, S. Lee, M. Dobrowolska, and J.K. Furdyna, *Phys. Rev. Lett.* 83, 2797 (1999).
 79. "Magnetic-field-induced substructures in multiple quantum wells consisting of magnetic and non-magnetic semiconductor layers," S. Lee, M. Dobrowolska,

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80. "CdSe Quantum Dots in Zn_{1-x}Mn_xSe Matrix: New Effects due to the Presence of Mn," C.S. Kim, M. Kim, S. Lee, J. Kossut, J.K. Furdyna, and M. Dobrowolska, *Journal of Crystal Growth* 214/215, 395 (2000).
 81. "Optical observation of quantum dot formation in sub-critical CdSe layers grown on ZnSe," C.S. Kim, M. Kim, S. Lee, J.K. Furdyna, and M. Dobrowolska, *Journal of Crystal Growth* 214/215, 761 (2000).
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 83. "Fabrication and optical properties of ZnSeTe superlattices with sinusoidal compositional modulations," S. Lee, G. Yang, X. Liu, U. Bindley, M. Dobrowolska, J.K. Furdyna, P.M. Reimer, and J.R. Buschert, *Journal of Crystal Growth* 214/215, 25 (2000).
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244. “Room temperature weak ferromagnetism in $\text{Sn}_{1-x}\text{Mn}_x\text{Se}_2$ 2D films grown by molecular beam epitaxy,” S.N. Dong, X.Y. Liu, X. Li, V. Kanzyuba, T. Yoo, S. Rouvimov, S. Vishwanath, H.G. Xing, D. Jena, M. Dobrowolska, and J.K. Furdyna, *Applied Physics Letters Materials* **4**, 032601 (2016).
245. Characterization of structural defects in SnSe_2 thin films grown by molecular beam epitaxy on GaAs (111)B substrates, Brian D. Tracy, Xiang Li, Xinyu Liu, Jacek Furdyna, Margaret Dobrowolska, and David J. Smith, *J. Crystal Growth* **453**, 58-64 (2016).

Grants Awarded

1. Agency: National Science Foundation
 Title: “Far-Infrared Studies of Diluted Magnetic Semiconductors”
 PI: J.K. Furdyna; CoPIs: M. Dobrowolska and N. Samarth
 Dates: 05/15/1989 - 04/30/1993
 Amount: \$214,560
2. Agency: National Science Foundation
 Title: “Acquisition of instrumentation for III-V/II-VI molecular beam epitaxy”
 PI: J.K. Furdyna; Co-PIs: M. Dobrowolska, H. Luo, and N. Samarth
 Dates: 08/1/1991 - 02/1/1993
 Amount: \$322,200
3. Agency: DOE, Subcontract through Solar Energy Research Institute
 Title: “Growth of Novel Ordered II-VI Semiconductor Alloys”
 PI: J.K. Furdyna; Co-PI: M. Dobrowolska
 Dates: 10/01/1991 - 02/28/1995
 Amount: \$360,000
4. Agency: International Business Machines
 Title: “Magneto-Optical Studies of Diluted Magnetic Semiconductor Heterostructures”
 PI: M. Dobrowolska
 Dates: 09/01/1991 - 09/01/1992
 Amount: \$16,400
5. Agency: National Science Foundation
 Title: “Optical and Far-Infrared Studies of Semiconductor Heterostructures”
 PI: M. Dobrowolska; Co-PIs: J.K. Furdyna and H. Luo
 Dates: 08/15/1992 - 08/15/1997
 Amount: \$284,035
6. Agency: National Science Foundation MRG, Subcontract through Purdue University
 Title: “Tetrahedrally Coordinated II-VI Semiconductor heterostructures”
 PI: J.K. Furdyna; Co-PI: M. Dobrowolska
 Dates: 11/1993 - 06/1996
 Amount: \$299,000
7. Agency: National Science Foundation Creativity Award
 Title: “Optical Studies of Semiconductor Heterostructures”
 PI: M. Dobrowolska; Co-PI: J.K. Furdyna

- Dates: 08/15/95 - 08/14/97
Amount: \$200,000
8. Agency: National Science Foundation MRG, Subcontract through Purdue University
Title: "Tetrahedrally Coordinated II-VI Semiconductor Heterostructures"
PI: J.K. Furdyna; CoPI: M. Dobrowolska
Dates: 09/01/96 - 05/31/97
Amount: \$58,428
9. Agency: National Science Foundation
Title: "Optical Studies of Semiconductor Heterostructures"
PI: M. Dobrowolska; CoPI: J.K. Furdyna
Dates: 08/15/97 - 08/14/00
Amount: \$300,000
10. Agency: University of Notre Dame
Title: "Equipment Restoration and Renewal"
PI: M. Dobrowolska
Dates: 01/01/00
Amount: \$190,000
11. Agency: National Science Foundation
Title: "Optical and Far Infrared Studies of Semiconductor Heterostructures"
PI: M. Dobrowolska; CoPI: J.K. Furdyna
Dates: 08/15/00 - 08/14/03
Amount: \$315,000
12. Agency: Indiana 21st Century Science and Technology Fund
Title: Semiconductor Spintronics: Fundamental Studies of Growth and Materials Properties
Role: Co-Principal Investigator
Dates: 6/1/00 - 5/31/02
Amount: \$304,000
13. Agency: National Science Foundation
Title: "Electron Spin Effects in Semiconductor Nanostructures"
Role: Principal Investigator
Dates: 8/1/03 – 7/31/06
Amount: \$331,839
14. Agency: National Science Foundation
Title: "NIRT: Formation and Properties of Spin-Polarized Quantum Dots in Magnetic Semiconductors by Controlled Variation of Magnetic Fields on the Nanoscale"
PI: Boldizar Janko; CoPIs: J. K. Furdyna and M. Dobrowolska
Dates: 8/1/02 – 7/31/06
Amount: \$1,830,000
15. Agency: National Science Foundation
Title: "Electron Spin Effects in Semiconductor Nanostructures"
PI: M. Dobrowolska; CoPI: J.K. Furdyna
Dates: 8/1/06 – 7/31/10
Amount: \$524,389
15. Agency: National Science Foundation
Title: "Electron Spin Effects in Semiconductor Nanostructures"

PI: M. Dobrowolska; CoPIs: J.K. Furdyna and X. Liu
Dates: 9/1/10– 8/31/14
Amount: \$600,000

15. Agency: National Science Foundation
Title: “Electron Spin Effects in Semiconductor Nanostructures
PI: M. Dobrowolska; CoPIs: J.K. Furdyna and X. Liu
Dates: 8/1/14 – 7/31/17
Amount: \$473,332

Doctoral Dissertations Directed

1. Ning Dai, Magneto-optical investigation of diluted magnetic semiconductor heterostructures: spin superlattices and single barriers, 1993
2. Fu-Cai Zhang, Magneto-optical investigations of II-VI DMS heterostructures: $Zn_{1-x-y}Mn_xCd_ySe/Zn_{1-x}Mn_xSe$ single quantum wells, $Zn_{1-x}Cd_xSe/Zn_{1-y}Mn_ySe$ type-I and CdSe/ZnTe based type-II superlattices, 1994
3. Maarij Syed, Investigation of the role of DMS/non-DMS interfaces on magneto-optical properties of small offset superlattices, 1998
4. Chulsoo Kim, Fabrication, structural, and optical properties of self assembled II-VI semiconductor quantum dots, 2000
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6. Lyubov V. Titova, Optical studies of low dimensional magnetic and non-magnetic semiconductor structures, 2004
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