



## Alexandre M. Zaitsev

Associate Professor of Physics  
Dept. of Engineering Science & Physics  
The College of Staten Island  
The City University of New York

**Dr.Sc.** in Physics and Mathematics, The Supreme Qualification Commission, Moscow, 1992

**Ph.D.** in Physics and Mathematics, Lebedev Physical Institute, Moscow, 1980

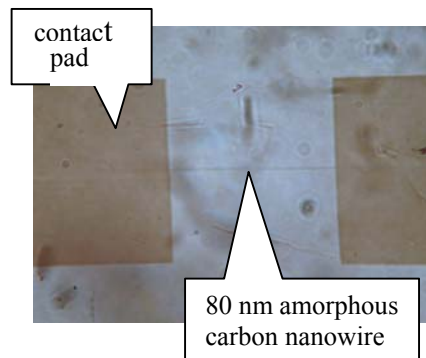
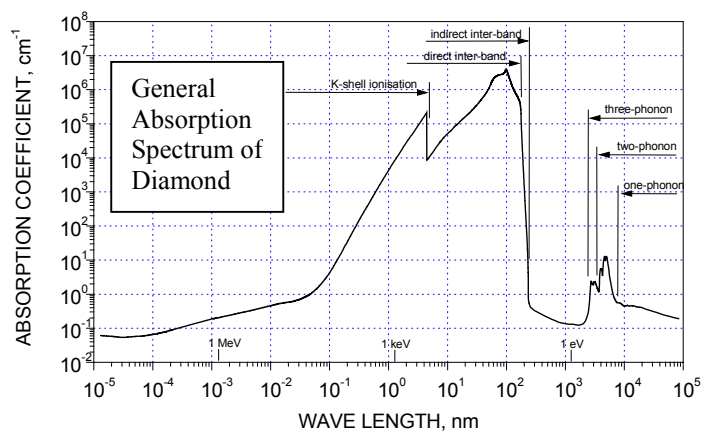
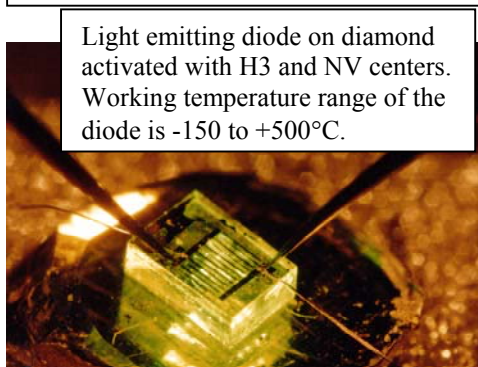
**M.S.** (honors) in Physics, Belarussian State University, Minsk, Belarus, 1975

Fellow of the Alexander von Humboldt Foundation (1992–1994)

Associate Editor of the Journal of Wide Bandgap Materials, SAGE Publications

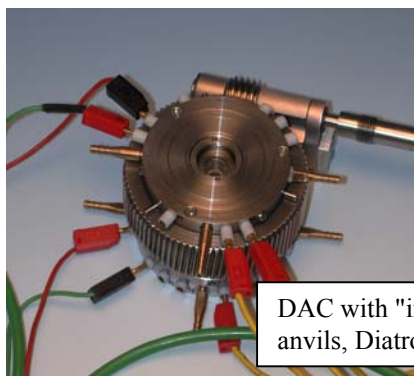
## My Current Research Interests:

**1. Physics, electronics and optoelectronics of diamond and other carbonaceous materials. The areas of particular interest are optical properties of impurity related centers and high temperature light emitting devices on diamond.**

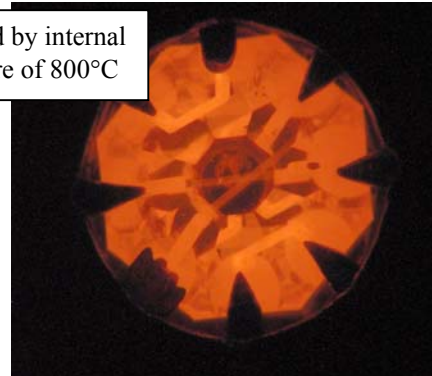


**2. Nanotechnology with focused ion beams: (i) Single photon light emitting diodes on diamond; (ii) Electronics of carbon nanowires on diamond substrates.**

**3. As a Chief Research Officer of Diatronic GmbH (Germany) I am involved in design of High Temperature Diamond Anvil Cells with "intelligent" diamond anvils carrying internal heaters and pressure and temperature sensors. (www.diatronic.com)**



Diamond anvil heated by internal heater to a temperature of 800°C

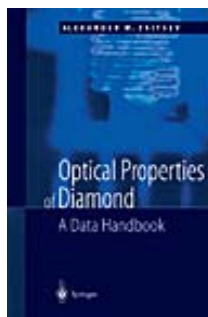


DAC with "intelligent" diamond anvils, Diatronic GmbH

## **Publications**

Author of more than 100 refereed articles, 13 patents and 14 invited talks at Int. Conferences.

Author of the "**Optical Properties of Diamond: A Data Handbook**" Springer-Verlag, Berlin, 2001, XVII, 502 pp. 285 figs., 21 tabs., Hardcover, ISBN: 3-540-66582-X (<http://www.springeronline.com/sgw/cda/frontpage/0,10735,5-40109-22-2060239-0,00.html>)



### *About this book*

This book is the most comprehensive compilation of data on the optical properties of diamond ever written. The handbook presents for the first time in English a multitude of data on the optics of diamond which were previously published only in Russian and which were never known to western researchers. The author presents his own views alongside the opinions of other researchers, even in cases where these are contradictory. The main benefit derived from this handbook is a quick access to the most comprehensive information on all aspects of the optical properties of diamond.

## ***Selected publications for the last 6 years:***

- T. Vogel, J. Meijer, A. M. Zaitsev, "Highly Effective p-Type Doping of Diamond by MeV-Ion Implantation of Boron", *Diamond and Related Materials*, Vol. 13 (2004).
- M. Burchard, A. M. Zaitsev, W. V. Maresch, "Extending the Pressure and Temperature Limits of Hydrothermal Diamond Anvil Cell", *Review of Scientific Instruments*, 2003, Vol. 74, No. 3, p. 1263-1266.
- V. A. Martinovich, A. V. Turukhin, A. M. Zaitsev, A. A. Gorokhovskiy, "Photoluminescence Spectra of Xenon-Implanted Natural Diamonds", *J. of Luminescence*, 102/103 (2003) 785-790.
- I. A. Dobrinets, A. M. Zaitsev, T. Etzel, J. Butler, A. D. Wieck, "Electrical Properties of Diamond Irradiated with Fine Focus Ion Beam", *J. of Wide Bandgap Materials*, (2002) pp. 8.
- M. Burchard, A.M. Zaitsev, J. Meijer, A. Stephan, B. Burchard, W.R. Fahrner, and W. Maresch: *Synthesis and structure of pure silica-RUB-10 (structure type: RUT) obtained with pyrrolidine as the structure directing agent*. *Microporous and Mesoporous Materials*. 43 (2001). p. 329 - 340

- A. A. Melnikov, M. Rusetsky, V. Varichenko, V. Skuratov, A. M. Zaitsev, W. R. Fahrner, J. Partyka, P. Wegierek, "The influence of high energy krypton ion irradiation on optical and electronic properties of diamond", *Vacuum*, 63 (2001), p. 725-730.
- A. M. Zaitsev, M. Burchard, J. Meijer, A. Stephan, B. Burchard, W. R. Fahrner, W. Maresch, "Diamond pressure and temperature sensors for high-pressure high-temperature applications", *Physica Status Solidi*, a 185 (2001), p. 59-64.
- A. M. Zaitsev, "Hydrogen Related Vibrational and Electronic Transitions in Diamond", in *Diamond: Properties, Growth and Applications*", Eds. M. H. Nazare and A. J. Neves, UNSPEC Publications, IEE, UK, (2001), p. 155-162.
- A. M. Zaitsev, "Characterization Techniques of Diamond", in „Handbook of Diamond Technology“, Trans Tech Publications, Ltd., ed. W. R. Fahrner, (2000), p. 1-357.
- A. A. Melnikov, G. Grabosch, W. R. Fahrner, A. M. Zaitsev, A. V. Denisenko, "Characteristics of p-i-p and p-i-n Diodes on Natural Diamond with Non-Homogeneous Nitrogen Distribution", *Journal of Wide Bandgap Materials*, Vol. 8, No. 2 (2000) 75-82.
- A. M. Zaitsev, "Vibronic Spectra of Impurity-Related Optical Centers in Diamond", *Phys. Rev. B*, 61 (2000), p. 12909-12922.
- J. A. Weima, A. M. Zaitsev, R. Job, G. Kosaca, F. Blum, G. Grabosch, W. R. Fahrner, "Investigation of Non-Diamond Carbon Phases and Optical Centers in Thermochemically Polished Polycrystalline CVD Diamond Films", pp. 15, accepted in *J. of Solid State Electrochemistry*, 4 (2000), p. 425-434.
- K. Thonke, R. Schliesing, N. Teofilov, H. Zacharias, R. Sauer, A. M. Zaitsev, H. Kanda, T. R. Anthony, "Electron-hole drops in synthetic diamond", *Diamond and Related Materials*, 9 (2000), p. 428-431.
- J. A. Weima, R. Job, W. R. Fahrner, A. M. Zaitsev, "Low energy carbonaceous and graphite phases on the surfaces of thermochemically polished chemical vapor deposited diamond films", *Journal of Applied Physics*, 87 (2000), p. 4553-4557.
- A. M. Zaitsev, A. V. Denisenko, G. Kosaca, R. Job, W. R. Fahrner, A. A. Melnikov, V. S. Varichenko, B. Burchard, J. von Borany, M. Wernwe, "Electronic Devices on Ion Implanted Diamond", *J. of Wide Bandgap Materials*, 7 (1999), p. 4-67.
- N. V. Novikov, A. P. Podoba, S. V. Shmegeera, A. Witek, A. M. Zaitsev, A. V. Denisenko, W. R. Fahrner, M. Werner, "Influence of isotopic content on diamond thermal conductivity", *Diamond and Related Materials*, 8 (1999), p. 1602-1606.
- A. M. Zaitsev, G. Kosaca, A. A. Melnikov, R. Job, W. R. Fahrner, „Thermochemical Polishing of CVD Diamond Films“, *Diamond and Related Materials*, 7 (1998), p. 1108-1117.
- A. A. Melnikov, A. V. Denisenko, A. M. Zaitsev, et al., "Electrical and optical properties of light-emitting p-i-n diodes on diamond", *J. of Appl. Phys.*, 84 (1998), p. 6127-6134.
- A. R. Chelyadinskii, V. S. Varichenko, A. M. Zaitsev, "Spatial distribution, build-up, and annealing of radiation defects in silicon implanted by high-energy krypton and xenon ions", *Physics of the Solid State*, 40 (1998), p. 1478-1481.
- M. A. Adawi, A. Y. Didyk, V. S. Varichenko, A. M. Zaitsev, "Radiation damage in dielectric and semiconductor single crystals (direct observation)", *Radiation Physics and Chemistry*, 53 (1998), p. 577-582.
- A. M. Zaitsev, „Optical Properties of Diamond“ in " *Industrial Handbook for Diamond and Diamond Films*", ed. by M. A. Prelas, G. Popovici, L. K. Bigelow, Marcel Dekker Inc., New York, (1998), p. 227-376.