

MU_FSCI_PHYS_SOLI_DATA_Mohamed.Badr

MOHAMED H. A. BADR

Egypt: Department of Physics, Faculty of Science, Menufiya University,
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Curriculum Vitae

PERSONAL:

- Nationality:** Egyptian
- Marital Status:** Married
- Date of Birth:** November 6th, 1967.
- Address:** Al-Rehab City (21/4/22), New Cairo, Egypt.

EDUCATION:

- UNIVERSITY OF KENTUCKY, Lexington, Kentucky, USA.**
 - 07-08-2003 Ph. D.** in Experimental Condensed Matter Physics
 - 02-08-2001 M. Sc.** in Experimental Condensed Matter Physics
- MENUFIYA UNIVERSITY, Menufiya, Egypt.**
 - 05-12-1993 M. Sc.** in Experimental Condensed Matter Physics
 - 01-05-1989 B. Sc.** in Physics (Excellent, honors)

MU_FSCI_PHYS_SOLI_LINK_Mohamed.Badr

RESEARCH INTERESTS:

Nanotechnology

- Development and synthesis of nanostructure materials in a strong confinement regime
- Investigating the influence of quantum size effects on the physical and optical properties of quantum dots

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Superconductivity

- Study of conventional and unconventional properties of novel and conventional *superconductors*.
- Measuring of the superconductors' quasiparticle and Josephson density of states by tunneling methods, using planar and mechanical junctions (point contact, scanning tunneling microscope, etc.).
- Development and synthesis of low- and high- T_c superconductors (polycrystalline, single crystals, thin films) planar and mechanical tunneling junctions

Interested also in

- Synthesis and Study of semiconductors thin films
- Synthesis and Study of Colossal Magneto Resistance (CMR) single crystals

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FELLOWSHIPS AND AWARDS:

- A Ph.D. Fellowship (1998-2003) from the Ministry of Higher Education and Scientific Research (Egypt) to pursue the degree of doctor of philosophy in Physics at the department of Physics and astronomy, University of Kentucky, USA.
- Award of the article of the year, Menufiya University (12/1995).
- Three awards for the best graduated student of Physics Department and Faculty of Science (1989).

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MEMBERSHIP IN SCIENTIFIC SOCIETIES:

- American Physical Society.
- Egyptian Society of Solid State Physics.

LIST OF PUBLICATIONS:

- “Strong confinement of PbSe nanocrystals in phosphate glass” , Wageh S., **M. H. Badr**, M.H. Khalil and A.S. Eid, *Physica E*, 41 (7), p. 1157-1163 (2009).
- “Cd_{1-x}Zn_xS Nanoparticles stabilized by a bifunctional organic molecule”, Wageh S. and **M. H. Badr**, *Physica E* 40 (8), p.2810-2813, (2008).
- “Temperature and Field Dependence of MgB₂ Energy Gaps from Tunneling Spectra”, **Mohamed H. Badr** and K.-W. Ng, *Physica C* 388-389 139 (2003).
- “Effect of Th Substitution on The Transition Temperature of Y_{1-x}Th_xBa₂Cu₃O_{7-δ} Superconducting System”, M.A. El-Shahawy, M.M. El-Zaidia, A.A. Abd El-Kader and **Mohamed H. Badr**, *IEEE Trans. Appl. Supercond.* 13 3144 (2003).
- “A New Heat Treatment to Prepare High-quality Polycrystalline and Single Crystal MgB₂ in a Single Process”, **Mohamed H. Badr** and K.-W. Ng, *Supercond. Sci. Technol.* 16 668 (2003).
- “Temperature and Field Dependence of the Energy Gap of MgB₂/Pb Planar Junction”, **Mohamed H. Badr**, Mario Freamat, Yuri Sushko and K.-W. Ng, *Phys. Rev. B* 65 184516 (2002).
- “Electrical and Magnetic Properties of Strontium doped Y Ba₂ Cu₃ O_{7-δ} Superconductor”, A. Abdel-Kader, A.A. El-hamalawy, M.A. El-Shahawy, M.M. El-Kholy, **M. H. Badr**, *Sci. J. Fac. Sci. Menoufiya Univ.*, VII, 75-87, 1993.

PATENTS:

- “New Superconductive Phase with T_c at 140-160 K”, A.A. El-hamalawy, A.A. Ammar, M.M. El-Zaidia, Z.I. El-Badawy, M.M. El-Kholy, **Mohamed H. Badr** et al. Egyptian Patent Office, Patent No. 94080473 (1994).

PRESENTATIONS AT PROFESSIONAL MEETINGS:

- **Mohamed H. Badr** and K.-W. Ng, “Polycrystalline and single crystal MgB₂: Synthesis and characterization”, APS meeting, Austin, Texas, USA (2003).
- **Mohamed H. Badr** and K.-W. Ng, “Temperature and field dependence of MgB₂ energy gaps from tunneling spectra”, 23rd International Conference of Low Temperature Physics, Hiroshima, Japan (2002).

□ **Mohamed H. Badr**, Mario Freamat, Y. Sushko, and K.-W. Ng, “Study of the Temperature and Field Dependence of MgB₂ Energy Gap” March meeting 2002, Indianapolis, Indiana, USA.

□ **Mohamed H. Badr**, Anjan Gupta, Yuri Sushko, K.-W. NG, “Study of Superconductivity in MgB₂” March meeting, Seattle, Washington, USA (2001) (Audio-Video link; www.aps.org/meet/MAR01/mgb2/talks2.html , talk# 33)

□ A. Abdel Kader, A. El-Hamalawy, M. El-Kholy, M. El-Shahawy, **Mohamed H. Badr**, “Effect of Sr Addition on the Transition Temperature of YBa_{2-x}Sr_xCu₃O_{7-δ}” Physics and Chemistry of Molecular & Oxide Superconductor Conference, Eugene, Oregon, USA (1993).

COMMITTEES:

- Quality Assurance & Accreditation Project (Co-Principal Investigator).
- Laboratories Preparatory Committee.
- Supervision and development of research and teaching laboratories.
- Practical training committee.

COMPUTER EXPERIENCE AND E-LEARNING:

- Blackboard, E-Learning, MS Office, AutoCAD, Origin, Sigma Plot, etc.
- Physics and Math. Software: PDP analysis, Energy gap modeling, Maple, Mathematica, etc.

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INSTRUMENTATION:

Experienced with the following instruments:

Morphology, Surface Analysis and Structure: SEM, STM, and XRD.
Electronic equipments: tunneling, electrical and magnetic measurements, etc.

Low temperature measurements: He and N closed circuit refrigerators.

Samples Preparation: QDs in glass, conventional and HTSC (polycrystalline, single crystals),

CMR (single crystals), tunneling junctions. Technique: Sputtering, Evaporation, Furnaces , etc.

SPECIAL TRAINING:

Legal Issues Concerning Universities bylaw (18 hrs., Menufiya University)

Credit Hours System (18 hrs, Menufiya University)

Macro and Micro Teaching (18 hrs, Menufiya University)

Course Design (18 hrs, Menufiya University)

Technology in Teaching (18 hrs, Menufiya University)
Quality assurance and accreditation project (6 hrs., Cairo & Menufiya Universities)
Preparation of future Faculty member (60 hrs., Menufiya University)
Advanced Physics Courses (4 semesters, 47 credit hrs., University of Kentucky)
Fire Extinguisher Training Program (3 hrs., University of Kentucky)
Hazardous Waste Generator Training Program (1 hr., University of Kentucky)
Chemical Hygiene Plan (Lab Safety) Training Program (2 hrs., University of Kentucky)
Creation of Electronic Theses and Dissertations (3 hrs., University of Kentucky)
Advanced Studies of English as a Second Language (4 months, University of Kentucky)

COURSES TAUGHT:

□ College of Arts and Sciences (Qatar University):

PHYS221: Electronics I
PHYS191: General Phys I –Engineering
PHYS192: Exp. Gen Phys For Eng. I
PHYS321: Electronics II
PHYS499: Senior Project (Superconductivity)
PHYS487: Independent Study (Nanotechnology)
PHYS194: Exp. Gen Phys For Eng. II
PHYS488: Independent Study

Faculty of Science (Menufiya University):

P498: Renewable Energies
P268: Electric Circuits
P167: Physical Electronics

□ Faculty of Education (Menufiya University):

Introductory Electric Circuits
Physical Electronics
Semiconductors
Electricity
Renewable Energies

REFERENCES:

1. Kwok-Wai Ng, Professor of Experimental Condensed Matter, Department of Physics and Astronomy, University of Kentucky, Lexington, Kentucky 40506-0055, USA. kwng@uky.edu Phone: (+859) 257-1782
2. Joseph Brill, Professor of Experimental Condensed Matter, Department of Physics and Astronomy, University of Kentucky, Lexington, Kentucky 40506-0055, USA. jwbrill@uky.edu Phone: (+859) 257-4670

3. Meawad El-Kholy, Professor of Exp. Cond. Matter, Chair person of Department of Physics,
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4. Yuri Sushko, Professor of Experimental Condensed Matter, Department of Physics and
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5. Magda El-shahawy, Professor of Experimental Condensed Matter,
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