Curriculum Vitae

Name: Bothina Abdallah H. Hamad

Sex: Female

Nationality: Jordanian

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Education:

1997- 2001 : Ph.D. in Physics, University of Jordan .
1992-1995 : M. Sc. In Physics, University of Jordan.
1984-1988: B. Sc. in Physics, University of Kuwait

Languages:

1. Arabic (native).
2. English (excellent speaking, reading and writing).
3. German (Fair speaking, reading and writing).

Academic positions :

1988- 1990: Lab. Instructor at Kuwait University.
1991- 1992: Teacher in a high school, Kuwait.
1992- 1995: Lab. Instructor at Jordan University.
1995- 1996: Teacher in a high school, Ministry of Education-Jordan.
1996- 2001: Lab. Instructor at Philadelphia University, Jordan.
2001- 2003: Assistant Professor at the University of Applied Science, Amman-Jordan.
2003- 2004: Research fellow of Alexander von Humboldt foundation at Fritz-Haber Institute, Berlin (Germany).
2004- 2005: Lecturer at the University of Jordan.
2005- 2008: Assistant Professor at the University of Jordan.
2008- 2012: Associate Professor at the University of Jordan.
2010- 2011: Fulbright fellow (Sabbatical leave) at Central Michigan University, MI, USA.
2012-present: Professor at the University of Jordan.

Honors and Grants :

1. Kuwait University Fellowship for undergraduate studies: 1984-1988.
2. Kuwait University Fellowship for graduate studies: 1988-1990.
3. Humboldt Foundation fellowship for research: 2003-2004.
4. Humboldt Foundation grant of 18,000 Euro for a dual core opteron linux (10 cpus) : 2006.
5. Deanship of scientific research grant of 15,000 JD : 2006
6. Deanship of scientific research grant of 10000 JD : 2008
7. Higher council of higher education grant of 77000 JD : 2009
8. Max-Planck fellowship (Max-Planck institute for complex systems, Dresden):2009-2010.
9. Fulbright fellowship (2010 – 2011).
10. Higher council of higher education grant of 38000 JD : 2014

Conferences and activities:

1. Sexth Petra School of Physics at Yarmook University , 1998.
2. Forth-Conference in Condensed Matter Physics at the University of Jordan . May, 2000.
3. Seventh Petra School of Physics at the University of Jordan . 2000.
4. Second regional conference on magnetic and superconductiog materials at Yarmook University ,2001.
5. Scientific visit to Fritz-Haber Institute- Max-Planck institute, Berlin , Germany , June-2002.
6. Workshop on Application of Density-Functional Theory in densed-Matter Physics, Surface Physics, Chemistry, Engineering, and Biology, Berlin, 21-30 July 2003 .
7. Internal Workshop Stralsund – Germany, September 2003.
8. Workshop on Electronic structure of materials, Isfahan University of Technology , Isfahan (26April -6May, 2005).
9. Visiting research fellow (Alexander von Humboldt fellowship) at Fritz-Haber Institute- Max-Planck institute, Berlin ,Germany, (6 June-16 September, 2005).
10. Twenty Third European Conference on Surface Science (ECOSS- 23),4 - 9 September 2005 (FU Berlin; Henry-Ford-Bau and Harnack House , Germany).
11. Scientific visit to Talat's Rahman group at the physics department, Kansas State university, USA, February 2006.
12. Visiting research fellow (DFG) at Fritz-Haber Institute- Max-Planck institute, Berlin ,Germany, (17 July-15 September, 2006).
13. SUMMER SCHOOL ON COMPUTATIONAL MATERIALS SCIENCE, July 31-August 11, 2006 · University of Illinois at Urbana-Champaign.
14. Scientific visit to Talat's Rahman group at the physics department, university of central Florida , Orlando, Florida, USA, February 2007.
15. Visiting research fellow (Alexander von Humboldt fellowship) at Institute of theoretical solid state (IFW), Dresden ,Germany, (14 June -4 September, 2007).

16. Nanotechnology and Nanomaterials conference , Sharm-El Sheikh, Egypt, 11-13 January (2008).
17. Visiting research fellow (DFG)at Institute of theoretical solid state (IFW), Dresden ,Germany, (June, 2008).
18. Visiting research fellow (Max-Planch fellowship) at Max Planck Institute for the Physics of Complex Systems (July, August , 2008)**.**
19. DFT meets Experiment & 7th Tutorial Hands-on-FPLO, August 25 - 28, 2008, Dresden, Germany.
20. Advanced School in High Performance and Grid Computing (3 - 14 November 2008), Trieste, Italy.
21. The International Conf. for Materials in Jordan; March 4-6 , 2009, Jordan
22. International conference of nanotechnology and materials; May 4-7, 2009, Bahrain.
23. Visiting research fellow (Alexander von Humboldt fellowship) at Institute of theoretical solid state, Technical university of Freiberg, Germany, (18 June – 1 September, 2009).
24. Psi-k conference: Berlin 2010.
25. Visiting research fellow (Alexander von Humboldt fellowship Free university of Berlin, Germany, (30 June – 30 August, 2012).
26. Visiting research fellow (Alexander von Humboldt fellowship Free university of Berlin, Germany, (January, 2013).
27. TMS 2013*:* Annual Meeting & Exhibition, San Antonio, Texas
28. Visiting research scientist (Free university of Berlin, Germany, (June-July, 2014).
29. TMS 2014*:* Annual Meeting & Exhibition, San Diageo, California, 2014.

Teaching experience:

A. Undergraduate Courses:

1. General physics I and II.
2. Mathematical physics I and II.
3. Quantum Mechanics I and II.
4. Classical Mechanics.
5. Electromagnetic theory I and II.

B. Graduate Courses:

1. Advanced Mathematical physics.
2. Theoretical Methods of Physics
3. Quantum Mechanics I and II.
4. Special Topics.
5. Group Theory.
6. Condensed matter.
7. Quantum Chemistry.

Graduate Student supervision:

1. **Belal Al-Qassem : PhD**

Thesis: Investigation of Interlayer Exchange Coupling Across Metallic Spacer Layers

2. **Hanan Al-Sa'adi: M.Sc**
Thesis: A Theoretical study of the Structural and Dynamical properties of metal surfaces
3. **Hashem Al-Yamani : M.Sc.**
Thesis: Ab-initio investigations of the structure and energetics of metal oxide surfaces.
4. **Ihsan Erikat: Ph.D.**
Thesis:"Ab initio study of CO oxidation reaction on Transition-metal catalysts".
5. **Yasmeen Qawasmeh: M.Sc.**
Thesis: Theoretical study of the electronic and magnetic properties of full Heusler alloys from first principles.
6. Ameena Haidary: M.Sc.
Thesis: First principles investigation of oxygen adsorption on FCC (110) transition-metal surfaces
7. Saed Alazar: PhD.
Thesis: Structural, electronic and magnetic properties of $Fe_{3-x}Mn_xZ$ (Z=Al, Ge, Sb) Heusler Alloys
8. Bedor Ahmad: M. Sc.
First principles investagation of the magnetic and electronic properties of Co_2CrAl-Heusler alloy.

9. Sanaa Al-Rjoub: M. Sc.
Theoritical study of the relativistic effect on the structural, electronic, and optical poropeties of HgX (X=S, Se, Te) binary and ternary alloys: first principles calculations.

10. Hadeel Abu Sammour: M. Sc.
Ab-initio study of electrical and thermal transport properties of thermoelectrical materials PbX (X=S ,Se ,Te).

11. Reem Shadeed: M. Sc.
Theoretical Study of the Structural, Electronic, Electrical and Mechanical Properties of Carbon Nano Ribbons and Nanotubes

12. Hashem Al-Yamany: PhD.
First principles investigations of the structural, energetics and thermoelectric properties of doped Fe_2VAl Heusler alloys.

Examination Committees:
1. **M.Sc. dissertation :"Spin Polarization of V overlayers on W substrate"**
by : Anwar “Mohammed Nezar” Bakir : January, 2005
2. **Ph.D. dissertation : "First Principle Study of Some Physical Properties of Transition metal Monosilisides"**
by : Manal AbdelSalam
3. **M.Sc. dissertation : "Combining Docking, Scoring and Molecular Field Analyses to Probe Influenza Neuraminidase-Ligand Interactions"**
by : Areej Mohammed K. Abu Hammad : December 2006
4. **Ph.D. dissertation : "Study of Magnetic Ordering Transition Metal nanostructures using ab-initio Methods"**

by: Amall Ahmed Ramanathan : January, 2008.
5. Ph.D. dissertation : "Electromagnetic Lagrangian Density : Fractional formulation"
by: Emad Khalid Jaradat, December 2008.
6. **Ph.D. dissertation : "Electronic and Magnetic structures of M(Si,Ge) compounds (X=Fe, Ni, and Ni): ab initio calculation:**
by: Ghada Ameereh, December 2008.
7. Ph.D. dissertation : "Electronic and Magnetic structures of M(Si,Ge) compounds (X=Fe, Ni, and Ni): ab initio calculation:
by: Ghada Ameereh, December 2008.
8. Mohammad Eweedat, PhD 2010.
9. Opponent for the Licentiate defense: "Elastic Properties and Phase Stability of Shape Memory Alloys from First-Principles Theory", Department of Materials Science and Engineering, Royal Institute of Technology, Stockholm, Sweden.
By Chunmei Li, November, 2010.

Community service, departmental committees, and outside memberships:
1. Committee of development.
2. Scientific Committee.
3. Seminars Committee
4. Committee of scientific research.
5. Committee of Jordanian physical society.
6. Member of Alexander von Humboldt club in Jordan.

Publications:

1. **B. A. Hamad**, J. M. and Khalifeh, "On the magnetism of iron-vanadium systems". Surface Science 470, 149 (2000).
2. **B. A. Hamad**, and J. M. Khalifeh, "Magnetism in Vanadium-Molybdenum systems". Journal of Physics: Condensed Matter 13 , 573 (2001).
3. **B. A. Hamad**, and J. M. Khalifeh, and C. Demangeat, "Spin Polarization of V/Mo(1 0 2n-1) Stepped Structures". Surface Science 481, 119-123.
4. **B. A. Hamad**, and J. M. Khalifeh, "Magnetism of (Fe, V, Mo)/Pd(001) systems". Surface Science 481, 33 (2001).
5. **B. A. Hamad**, and J. M. Khalifeh,"Spin polarization of Cr/V vicinal structures", Surface Science 492, 161 (2001).
6. **B. A. Hamad**, J. M. and Khalifeh," Magnetism of Ultrathin Fe films on Mo substrates with low and high Miller indices". Physica B 321, 217 (2001).
7. Y. Sh. Mohammed, **B. A. Hamad**, and J. M. Khalifeh, "Ferromagnetism of Cr/Mn Systems". Physica B 321 , 213 (2002).
8. J. M. Khalifeh, and **B. A. Hamad,** "Half-Coverage Overlayers on Pd(001) Substrates". Physica B 321, 230 (2002).
9. **B. A. Hamad,** J. M. Khalifeh, and C. Demangeat, "Magnetism of Fe Monolayer on vicinal W substrate". Surface Science 516 , 69 (2002).
10. **B. A. Hamad**, J. M. Khalifeh, and T. M. Khajil, " Magnetism of Alloyed Models of $Cr(Mn)_xV_{1-x}$ and Mn_xCr_{1-x} Overlayers on V(001) Substrates ", Eur. Phys. J. B 29 , 497 (2002).

11. **B. A. Hamad**, J M. Khalifeh, and C. Demangeat, " Spin Polarization of Fe monolayers on Ir substrates ". Surface Science 525, 100 (2003).
12. **B. A. Hamad**, J. M. Khalifeh, C. and Demangeat, "Stabilization of ferromagnetic configuration through alloying for monolayers of V, Cr, Mn on Pt(001) substrate", Surface Science 542 , 230 (2003).
13. **B. A. Hamad**, and J. M. Khalifeh, " Spin polarization of Cr monolayers on W(10k) vicinal surfaces ", J. Phys.: Condens. Matter 15 , 5821 (2003).
14. **B. A. Hamad**, and J. M. Khalifeh, " Spin Polarization of Cr/Ir vicinal Structures", J. Phys.: Condens. Matter 15 , 8157 (2003).
15. A. M. Bakir, **B. A. Hamad,** J. M. Khalifeh , "Surface and interface magnetism of V/W systems", Physica status solidi (b) 242, 2522 (2005).
16. K.M. Tarawneh, **B.A. Hamad** and J.M. Khalifeh , " Dimensional and Proximity Magnetic Effects in Cr/V Systems" Surface Science 600, 1026 (2006)
17. R. A. Nasrallah, **B. A. Hamad** and J. M. Khalifeh, "Interface Magnetic Effects in Vanadium Overlayers on Manganese Substrate " , Solid State Comm. 138, 412 (2006).
18. **B. A. Hamad**, J. Khalifeh and C. Demangeat, "Metastable magnetic configurations of (V, Cr, Mn and Fe) on Ir(001) surfaces", Surface Science 601 346 (2007).
19. **B. A. Hamad**, "Magnetic ordering of Vn/Mo(0 0 1) systems: Ab-initio calculations", Surface Science 601, 346 (2007).
20. A.A. Ramanathan, J.M. Khalifeh and **B.A. Hamad**, "Evidence of surface magnetism in the V/Nb(001) system: A total energy pseudopotential calculation", Surface Science 602, 607 (2008).
21. H. Sa'adi and **B. Hamad**, "Structural and dynamical properties of iridium surfaces: First principles and molecular dynamics investigations", Physica B 403, 2748 (2008).
22. B. Al-Qasem, **B. A. Hamad** and J. M. Khalifeh, "Interface Magnetic Exchange Coupling of Co/Ir Multilayers", J.Phys. Eur.B62, 433 (2008).
23. H. Sa'adi and **B. A. Hamad**, "First-principles investigations of iridium low index surfaces" J. of Phys. Chem. Solids 69, 2457 (2008).
24. G. I. Ameereh, **B. A. Hamad** and J. M. Khalifeh, " Electronic Structure of Co (Si,Ge) Compounds:Ab-initio Calculation", Physica B 403, 3503(2008).
25.A.A. Ramanathan, J.M. Khalifeh and **B. A. Hamad**, "The Structure and magnetism of Fe/Mo(001) surface:A pseudopotential calculation", Journal of Magnetism and Magnetic Materials 320, 2629 (2008).
26. G. I. Ameereh, **B. A. Hamad** and J. M. Khalifeh, "Electronic Structure of Fe4Si4−xGex (x=0–4) compounds: ab initio calculation", Physica Status Solidi b, 246, 129 (2009).
27. **B. A. Hamad**, " Structural and Dynamical properties of Ru(0001) Surface", Surface Science, 602, 3654 (2008).
28. I. A. Erikat, **B. A. Hamad** and J. M. Khalifeh, " Adsorption of O and CO on Ir(100) from first principles", Eur. Phys.J. B 67, 45 (2009).
29. Z. Charifi, H. Baaziz, **B. Hamad,** "Theoretical prediction of the structural and electronic properties of pseudocubic X3As4 (X = C, Si, Ge and Sn) compounds",Physica B 404, 1632 (2009).
30.A.A. Ramanathan, J.M. Khalifeh and **B. A. Hamad**, "Structure and magnetism of the V/Ta(0 0 1) surface: A DFT calculation", Journal of Magnetism and Magnetic Materials 321,3804 (2009).

31. **B. A. Hamad**, First-principle calculations of structural and electronic properties of rutile-phase dioxides (MO2), M = Ti, V, Ru, Ir and Sn, Eur. Phys. J. B 70, 163(2009).
32. A. Mousa, **B. Hamad** , and J. Khalifeh, "Structure, electronic and elastic properties of the NbRu shape memory alloys", Eur. Phys. J. B 72, 575 (2009).
33. B. Alqassem, **B.A. Hamad**, J.M. Khalifeh, "Exchange Coupling and Magnetic Properties of Fe/Ir(001) superlattices", Jordan Journal of Earth and Environmental Sciences 2, 81 (2009).
34. A. Mubarak, **B. Hamad** and J. Khalifeh, "The influence of hydrogen on the electronic and magnetic structures of TM(0 0 1) (TM=Fe, Co, Ni, and Cu) surfaces and interfaces: Ab-initio calculations", Journal of Magnetism and Magnetic Materials 322, 780 (2010).
35. Ali Hussain Reshak, Z. Charifi, H. Baaziz, **B. Hamad**, "Specific features of electronic structure and linear optical properties of some pseudocubic compounds", Computational Materials Science, **48**, 326 (2010).
36. **B. Hamad**, J. Khalifeh, I. Abu-Aljarayesh, C. Demangeat, H. B Luo, and Q-M Hu, " The electronic structure and spin polarization of $Fe_{3-x}Mn_xSi$ and $Fe_{3-y}MnSi_y$ alloys", J. Appl. Phys. **107**, 093911 (2010).

37. **B. Hamad**, " Magnetic Map of MnNi alloyed monolayer on Cu(001) substrate: ab-initio calculations", International Journal of Nanoscience 9, 619 (2010).

38. **B. A. Hamad** and J. Kortus, " Magnetic properties of $X_{0.5}Mn_{0.5}$/Cu(001) overlayers, X = Fe, Mn, and Ir: ab-initio calculations", Eur. Phys. J. B **76**, 373 (2010).
39. A. Mubarak, **B. Hamad** and J. Khalifeh, " Energetics, structural and magnetic ordering of H/Fe/M(001), (M= Cu, Ag) systems ", Journal of Magnetism and Magnetic Materials **323**, 383 (2011).
40. I. Erikat, **B. Hamad** and J. Khalifeh, " Catalytic oxidation of CO on Ir(100)" Physica status solidi B **248**, 1425 (2011).
41. **B. Hamad**, "The effect of defects on the electronic structure and magnetic map of the Fe_2CrSi Heusler alloy: Ab-initio calculations", Eur. Phys. J. B **80**, 11-18 (2011).
42. A. Ramanathan, J. Khalifeh and **B. Hamad**, "A DFT study of substrate effect on the magnetism of the V(001) surface", Surface Science **605**, 1074(2011).
43. I. Erikat, **B. Hamad** and J. Khalifeh, "A density functional study on adsorption and dissociation of O_2 on Ir(100) surface", Chemical Physics **385**, 35 (2011).
44. **B. Hamad** and M. Richter, "Exchange coupling and magnetocrystalline anisotropy of Fe/W superlattices", Phys. Rev. B 83, 245135 (2011).
45. **B. Hamad** and Q-M Hu, "The effect of defects on the electronic and magnetic properties of Fe_2MnSi Heusler alloy", Phy. Stat. Solidi. B, 248, 2893 (2011).
46. **B. Hamad**, J. Khalifeh, Q-M Hu, and C. Demangeat, "Electronic and magnetic properties of $Fe_{3-x}Cr_xSi$ ordered alloys from first principles", J. Material Science 47,797 (2012).
47. I. Erikat, **B. Hamad** and J. Khalifeh, " Coadsorption of CO and O on Ir(100): First Principles Calculations", Physica B 407, 468 (2012).
48. H. Baaziz , Z. Charifi , Ali Hussain Reshak, **B. Hamad** and Y. Al-Douri, "Structural and electronic properties of GaN_xAs_{1-x} alloys", Appl. Phys. A 106, 687 (2012).
49. Y. Qawasmeh and **B. Hamad**, "Investigation of the structural, electronic and magnetic properties of Ni-based Heusler alloys from first principles ", J. Appl. Phys. 111, 033905 (2012).

50. **B. Hamad**, Z. Charifi, H. Baaziz, and F. Soyalp, “A DFT study of the electronic and magnetic properties of $Fe_2MnSi_{1-x}Ge_x$ alloys”, J. Magn and Magn Mater.324, 3345 (2012).
51. I. Erikat, **B. Hamad** and J. Khalifeh, "A density functional study for adsorption and oxidation of NO on Ir (1 0 0) surface", Applied Catalysis A **449**, 9 (2012).
52. B. Abu Alhaj and **B. A. Hamad**, " Ab-initio calculations of the electronic and magnetic structures of $Co2Cr_{1-x}Mn_xAl$ alloys" J. Appl. Phys. **112**, 123904 (2012).
53. S.M. Azar, **B. A. Hamad**, J. M. Khalifeh, "Structural, electronic and magnetic properties of (Z=Al, Ge, Sb) Heusler alloys", J. Mag. Mag. Mater**.324**, 1776 (2012).
54. B. Abu Alhaj and **B. A. Hamad**, " The effect of defects on the electronic and magnetic properties of Co_2CrAl Heusler alloy" J. Phys. Chem. Solids, 74, 265 (2013).
55. N.T. Mahmoud, J. M. Khalifeh, **B. A. Hamad** and A. A. Mousa," The effect of defects on the electronic and magnetic properties of the Co_2VSn full Heusler alloy: ab-initio calculations " , Intermetallics **33**, 33 (2013).
56. A.A. Mousa, J.M. Khalifeh and **B. A. Hamad,** Electronic, Elastic structure and phase stability of TaRu shape memory alloy" American Journal of condensed matter physics 3, 1-8 (2013).
57. B. Abu Alhaj and **B. A. Hamad,** J.M. Khalifeh and R. Shaltaf, **“**Ab-initio calculations of the electronic and magnetic structures of $Co_2Cr_{1-x}Mn_xSi$ alloys**”,** J. Mag. Man. Mater. **336**, 37 (2013).
58. S. J. Ikhmayies, **B. A. Hamad,** and J.M. Khalifeh, “Ab - Initio Calculations of the Optical Properties of Δ - NBN Single Crystal”, Characterization of Minerals, Metals, and Materials 2013, 243 (2013).
59. B. Abu Alhaj and **B. A. Hamad,** Electronic and magnetic properties of Co2-xFexCrAl alloys: ab-initio calculations, Phys. Status Solidi B, 1–6 (2013) / DOI 10.1002/pssb.201349215.
60. N. T. Mahmoud, .M. Khalifeh. , A. A. Mousa, H. K. Juwhari, **B. A. Hamad** , “The energetic, electronic and magnetic structures of $Fe_{2-x}Co_xVSn$ alloys: Ab-initio calculations”, Physica B 430, 58 (2013).
61. I. A. Erikat and **B. A. Hamad**, “A first principle study for the adsorption and absorption of carbon atom and the CO dissociation on Ir(100) surface”**,** J. Chem. Phys. **139**, 174703 (2013).
62. I. A. Erikat and **B. A. Hamad**, and J.M. Khalifeh, “A first principles study of the adsorption of N atom and dissociation of NO molecule on Ir(100) surface”, accepted in EPJB.
63. R. Shaltaf, H. K. Juwhari, **B. Hamad**, J. Khalifeh, G.-M. Rignanese, X. Gonze "Structural, electronic, vibrational and dielectric properties of LaBGeO$_5$ from first principles" , J. App. Phys.115, 074103 (2014).
64. **B. A. Hamad**, "Investigations of the electronic and magnetic structures of Co2YGa (Cr, Mn) Heusler alloys and their (100) surfaces", J. App. Phys.115, 113905 (2014).