Yaser Abdi

Contact Information

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Date of Birth

Oct, 13, 1981

Citizenship

Iranian

Research Interests

Exprimental and Computational Solid States Physics

- Fabrication of dye sensitized solar cells
- Modeling the electron transport In nano structured solar cells
- Fabrication of gas sensors
- Fabrication of field emission based nano-electronic devices
- Fabrication of graphene based devices
- Simulation of electrical properties of graphene and graphene nano-ribbons
- Fabrication of optoelectronic devices

Education

University of Tehran, Tehran, Iran, **Sep. 2005 to Sep, 2009**

▷ Ph.D. in *Solid State Physics*.

- Overall GPA: **GPA: 19.5/20**, (First rank in class)

University of Tehran, Tehran, Iran, **Sep. 2003 to Sep, 2005**

▷ M.Sc. in *Solid State Physics*.

- Overall GPA: **GPA: 18.56/20**, (First rank in class)

Iran university of science and technology, **Sep. 1999 to Sep, 2003**

▷ B.Sc. in *Solid State Physics*.

Present Position

Associate Professor of Departmant Of Physics University Of Tehran(2009-Now)

Teaching Experience

Courses at the graduate level(2009-now)

- Advanced Quantum Mechanics I,II
- Advanced Solid State I,II
- Nanoparticles and Their Applications
- Advanced Solid State Physics Laboratory

Honors and Awards

- Distinguished Iranian Young Researcher, Iranian Physical Society. **2007**
- Dr Ali Mohamadi Award for Outstanding young researcher in physics By University of Tehran **2010**

- Distinguished International Researcher at University of Tehran. **2013**
- Membership of the "Scientific Elite Federation" **2015-Now**

Academic Experience

Exprimental, Computational and Theoretical Experience

- Fabrication of branched carbon nanotubes and their applications on nano-sensors.
- Fabrication and modeling of nano-crystalline materials.
- Nanolithography using vertically grown carbon nano-tubes.
- Fabrication of field emission display by nano tubes.
- Fabrication of field emission transistor using encapsulated nano-structure.
- Fabrication of CNT-based gas sensors.
- Fabrication of 100 nm gate MOSFET using nano-tube-based nanolithography.
- Fabrication of strain gauge on membrane.
- Low temperature crystallization of Silicon and Germanium.
- Fabrication of plasma display on glass and flexible substrate

Publications

Patent

1. Mohajerzadeh, Shamsoddidn, Yaser, Abdi, Hadi, Hosseinzadegan, Javad, Koohsorkhi "A method of forming a carbon nanotube emitter, carbon nanotube emitter with applications in nano-printing and use there of" EUROPEAN PATENT APPLICATION, EP 1 755 137 A1 (2007)

Journal Papers

1 Y. Abdi, J. Derakhshandeh, P. Hashemi, S. Mohajerzadeh, F. Nayeri, E. Arzi and M.D. Robertson, H. Radamson, Light emitting nano-porous silicon structures fabricated using a plasma hydrogenation technique, Material Science and Engineering B 124125 (2005) 483487

2 J. Derakhshandeh, Y. Abdi, S. Mohajerzadeh and H. Radomson, Fabrication of 100nm gate length MOSFETs using novel carbon-nanotube-based nano-lithography, Material Science and Engineering B, 124125 (2005) 354358.

3 Y. Abdi, S. Mohajerzadeh, J. Koohsorkhi, H. Hoseinzadegan, PECVD-grown Carbon-Nanotubes on silicon substrates suitable for nano-lithography, Applied Physics Letters, 88. (2006) 1-3.

4 Y. Abdi, J. Koohsorkhi, J. Derakhshandeh, S. Mohajerzadeh, H. Hoseinzadegan, M.D. Robertson and C. Bennet, PECVD-grown carbon nano-tubes on silicon substrates with a nickel-seed tip-growth structure, journal of material science and Engineering C, 26 (2006) 1219 1223

5 Y. Abdi, Y. Komijani, S. Mohajerzadeh, Realization of vertically aligned carbon Nanotubes on silicon substrates International journal of nanoscience and nanotechnology, Vol. 1, pages 34-40, (2006).

6 P. Hashemi, Y. Abdi, S. Mohajerzadeh, A. Khajooeizadeh, and M.D. Robertson, low temperature Hydrogenation-assisted nano crystalization and oxidation of amorphous silicon by RF PECVD Journal of Applied Physics, vol 100, no. 10, Nov, (2006).

7 J. Koohsorhi, Y. Abdi, S. Mohajerzadeh, H. Hoseinzadegan, and E. Asl Soleimani Novel Self-defined field-emission transisotrs using carbon nano-tubes Journal of Carbon 44 (2006) 27972803.

8 K. Zandi, E. Arzi, N. Izadi, S. Mohajerzadeh, S. Haji, Y. Abdi, and E. Asl Soleimani Study of bulk micromachining for (100) silicon Eur. Phys. J. Appl. Phys. 35, (2006) , 712.

9 Y. Abdi, J. Koohsorkhi, S. Mohajerzadeh, S. Darbari and Z. Sanaie Embedded vertically grown carbon nanotubes for field emission applications, J. Vac. Sci. Technol. B 25(3) ,(2007)

822-828.

10 Y.Abdi, M. Jamei, P. Hashemi, S. Mohajerzadeh, M. D. Robertson, M. J. Burns, and J. M. MacLachlan Visible photoluminescence from a nanocrystalline porous silicon structure fabricated by a plasma hydrogenation and annealing method JOURNAL OF APPLIED PHYSICS 101, 044309 (2007)

11 M. Jamei, F. Karbassian, S. Mohajerzadeh, Y. Abdi, M.D. Robertson, Fabrication of light-emitting diodes with a plasma hydrogenation of three dimensional nanocrystalline silicon thin films IEEE Electron Device Letters 28, NO. 3,(2007) 207-210.

12 Y. Abdi, S. Mohajerzadeh and S. Darbari, Both-end opened carbon nanotubes on silicon based membranes, Physica E, 37 (2007) 226230

13 Y. Abdi, P. Hashemi , S. Mohajerzadeh , M. Jamei ,M.D. Robertson , M.J. Burns , J.M. MacLachlan , Silicon nano-crystalline structures fabricated by a sequential plasma hydrogenation and annealing technique , Thin Solid Films 516 (2008) 31723178.

14 Y. Abdi, S. Mohajerzadeh, J. Koohshorkhi, M.D. Robertson and J.C. Bennett, A plasma enhanced chemical vapor deposition process to achieve branched carbon nanotubes, Journal of Carbon. 46 (2008) 16111625

15 Y. Abdi, E. Arzi, and S. Mohajerzadeh Effects of plasma power on the growth of carbon nanotubesin the plasma enhanced chemical vapor deposition method Eur. Phys. J. Appl. Phys. 44, 149153 (2008).

16 Y. Abdi, S. Mohajerzadeh, E. Arzi Plasma assisted control on the growth of carbon nanotubes on patterned structures Fullerenes, Nanotubes and Carbon Nanostructures, 17: 273284, (2009)

17 M.Pazoki, Y.Abdi and E.Arzi Anomalous nucleation of gold nanoparticles on silicon substrate and monitoring the growth of ZnO nanowires on such structures Eur. Phys. J. Appl. Phys. 47, 10602 (2009).

18 Y. Abdi, A. Ebrahimi S. Mohajerzadeh and M. Fathipour "High sensitivity interdigited capacitive sensors using branched treelike carbon nanotubes on silicon membranes" APPLIED PHYSICS LETTERS 94, 173507 (2009).

19 M. Baghgar, Y. Abdi, E. Arzi. JOURNAL OF PHYSICS D-APPLIED PHYSICS 42 (13) 135502 (2009).

20 M. Baghgar, Y. Abdi and E. Arzi Effects of magnetic and electric fields on the growth of carbon nanotubes using plasma enhanced chemical vapor deposition technique Eur. Phys. J. Appl. Phys. 48 (2) 20603 (2009).

21 O. Akhavan, M. Abdolahad, Y. Abdi and S. Mohajerzadeh. Synthesis of titania/carbon nanotubes hetrojunction arrays for photodegradation of bacteria in visible light irradiation Journal of Carbon 47 (14) 3280-3287 (2009).

22 Rostami H, Abdi Y, Arzi E Fabrication of optical magnetic mirrors using bent and mushroom-like carbon nanotubes CARBON 48 (13) 3659-3666 (2010).

23 Darbari S, Abdi Y, Mohajerzadeh S, et al. High electron emission from branched tree-like carbon nanotubes suitable for field emission applications CARBON 48 (9) 2493-2500 (2010) .

24 Mehran M, Mohajerzadeh S, Sanaee Z, Abdi, Y. Nanograss and nanostructure formation on silicon using a modified deep reactive ion etching APPLIED PHYSICS LETTERS 96 (20) 203101 (2010).

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by chemical-vapor and plasma-enhanced chemical-vapor deposition methods JOURNAL OF NANOPARTICLE RESEARCH 12 (2) 521-528 (2010).

26 Darbari S, Abdi Y, Mohajerzadeh S A novel gas sensor based on chemisorption and field ionization from branched carbon nanotubes Eur. Phys. J. Appl. Phys. 52 3 (2010) 30602.

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33 A Malekan, Y Abdi, E Arzi Dynamic study of a field emission sensor based on carbon nanotubes for acceleration and high frequency vibration sensing Eur. Phys. J. Appl. Phys. 55, 10403 (2011)

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porous nanostructure: simulation and experimental investigation J Nanopart Res (2014) 16:2308

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69 M Monshipouri, Y Abdi, Y Oh, S Bagiante, V Guzenko, S Tsujino, F Brunner, T Feurer Electron emission from nanostructures triggered by optical and terahertz ultrafast pulses Vacuum Nanoelectronics Conference (IVNC), 2016 29th International, 1-2 (2016)

70 M Monshipouri, M Behrooz, Y Abdi First principle method for studying field emission current of carbon nanotubes Vacuum Nanoelectronics Conference (IVNC), 2016 29th International, 1-2 (2016)

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72 M Monshipouri, Y Abdi, S Darbari Influence of light on field emission from carbon nanotube forests in presence of silver nanoparticles Vacuum Nanoelectronics Conference (IVNC), 2016 29th International, 1-2 (2016)

73 M Javadi, Y Abdi, E Arzi Local collection efficiency in the nano-crystalline solar cells Solar Energy 133, 549-555 (2016)

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Conference Attended

[1] 1. Encapsulated Vertically Grown Carbon Nano-Tubes for Submicron and Nano-Lithography; presented at Material Research Society (MRS) spring meeting, San Francisco, CA, March28-April1 (2005). Y. Abdi, J. Koohsorkhi, P. Hashemi, S. Mohajerzadeh, H. Hosseinzadegan and L.Rezaee

[2] 2. Anomalous tip growth of carbon nanotubes on silicon substrates using a PECVD method presented at 207th Meeting of the Electrochemical Society, Inc. (ECS)- Quebec City, Canada May 15-20, (2005). J. Koohsorkhi, Y. Abdi, H.Hosseinzadegan, S. Mohajerzadeh, M.D. Robertson and C. Bennett

[3] 3. Gated Field-emission Nano-Structures for carbon-based Nanolithography presented at 207th Meeting of the Electrochemical Society, Inc. (ECS)- Quebec City, Canada May 15-20, 2005 Y. Abdi, J. Koohsorkhi, H. Hosseinzadegan, S. Mohajerzadeh, M.D. Robertson

[4] 4. PECVD-grown Carbon-nano-tubes on Silicon Substrates with an anomalous Nickel-seeded Tip-growth structure presented at EMRS Spring Meeting, Strasbourg, France, May 2005 Y. Abdi, J. Koohsorkhi, J. Derakhshandeh, S. Mohajerzadeh, H. Hosseinzadegan, M.D. Robertson and C. Benet

[5] 5. Application of Encapsulated PECVED-grown Carbon Nano-Structure Field-Emission Devices in Nanolithography presented at Nanotech, (2005) J. Koohsorkhi, Y. Adbi, S. Mohajerzadeh J. Derakhshandeh, H. Hosseinzadegan and A. Khakifirooz

[6] 6. Application of carbon nanotubes in nano-lithography and nano-electronics presented at Device Research Conference, USA, 2005. Y. Abdi, S. Mohajerzadeh, H. Hosseinzadegan, D. Shahrjerdi, M. Robertson and J.C. Bennett

[7] 7. Application of carbon nanostructure for submicron nanolithography, using the emission current presented at 13th Iranian Conference on Electrical Engineering, ICEE 2005, May 10- 12, 2005 University of Zanjan, I.R.Iran H. Hosseinzadegan, Y. Adbi, J. Koohsorkhi, S. Mohajerzadeh, E. Asl. Soleimani

[8] 8. PECVD-grown Vertically-aligned carbon nano-tubes on silicon suitable for nano-transistor fabrication and nano-scale writing presented at Canadian Semiconductor Technology Conference (2005). Y. Abdi, S. Mohajerzadeh, H. Hoseinzadegan, A. Khajooee, M.D. Robertson and J.C. Bennet

[9] 9. Photoluminescence of nano structured silicon fabricated by hydrogenation presented at condensed matter conference (2005) iran. Y.Abdi, P.Hashemi, S.Mohajerzadeh, E.Asl soleymani, E.Arzi, F.D.Nayyeri,

[10] 10. Low Temperature Metal-Free Fabrication of polycrystalline Si and Ge TFT's by PECVD Hydrogenation presented at Material Research Society (MRS) spring meeting, San Francisco, CA, March28-April1 (2005). P.Hashemi, J.Derakhshandeh, B.Hekmatshoar, S.Mohajerzadeh, Y.Abdi,M.D.Robertson.

[11] 11. Fabrication of Nano-crystalline Porous Silicon on Si substrates by a Plasma Enhanced Hydrogenation Technique presented at Material Research Society (MRS) spring meeting, San Francisco, CA, March28-April1 (2005). Y.Abdi, P.Hashemi, F.D.Nayeri, A.Behnam, S.Mohajerzadeh,J.Koohsorkhi, M.D.Robertson. ; E.Arzi.

[12] 12. Self-Defined PECVED-grown Carbon Field-Emission Transistors with Applications in Electron Diffraction presented at Material Research Society (MRS) spring meeting, San Francisco, CA, March28-April1 (2005). J.Koohsorkhi, Y.Abdi, S.Mohajerzadeh, J.Derakhshandeh, L.Rezaee, M.D. Robertson.

[13] 13. Light emitting Nano-porous silicon structures fabricated using a plasma hydrogenation technique presented at EMRS Spring Meeting, Strasbourg, France, May 2005. Y. Abdi, J. Derakhshandeh, S. Mohajerzadeh, F. Nayeri, E. Arzi and M.D. Robertson

[14] 14. Fabrication of 100nm Gate length MOSFETs using a novel carbon-nanotube-based nano-lithography presented at EMRS Spring Meeting, Strasbourg, France, May 2005, J. Derakhshandeh, Y. Abdi, S. Mohajerzadeh, J. Koohsorkhi and M.D. Robertson

[15] 15. Metal Free Crystallization of Silicon by RF-PECVD Hydrogenation in Low Temperatures presented at Canadian Semiconductor Technology Conference (2005). P. Hashemi, A. Behnam, Y. Abdi, S. Mohajerzadeh, A. Khajooeizadeh and M. D. Robertson

[16] 16. Growth of carbon nano-structures and their alloys on micro-cantilever made from silicon to fabricate atom-probe tips presented at condensed matter conference (2005) iran B.Arvan, S.Mohajerzadeh, N.Izadi, Y.Abdi, S.Darbari, E.Arzi.

[17] 17. Low Temperature Growth of Nano-crystalline Silicon and Germanium Using RF Hydrogen Plasma with Application in Thin Film Transistors presented at physics conference (2005) iran P.Hashemi, Y.Abdi, S.Mohajerzadeh, J.Derakhshandeh, B.Hekmatshoar, E.Arzi, M.D.Robertson.

[18] 18. Very Low Temperature Growth of Silicon Oxide Using Oxygen Plasma and Nano-Crystalline Silicon with Application in Flexible Substrate Thin Film Transistors presented at physics conference (2005) iran P.Hashemi, S.Mohajerzadeh, Y.Abdi, M.D.Robertson.

[19] 19. feasibility study of nano-lithography using electron emission of DC PECVD grown conical carbon nano-tubes presented at condensed matter conference (2005) iran Y.Abdi, J.Koohsorkhi, S.Mohajerzadeh, E.Arzi.

[20] 20. Hydrogenation-Assisted Crystallization of Amorphous Silicon on Glass for Low Temperature Growth of Silicon Oxide Layers, presented at the 21st International Conference on Amorphous and Nanocrystalline Semiconductors (ICANS 21), Lisbon, Portugal, September 2005. P. Hashemi, Y. Abdi, S. Mohajerzadeh, and M. D. Robertson,

[21] 21. PECVD grown vertically embedded CNTs for field-emission displays and gated transistorsaccepted to be presented at Material Research Society (MRS) spring meeting, San Francisco, CA, March19-April1 (2006). Y.Abdi, J.Koohsorkhi, S.Mohajerzadeh, E.Arzi, M.D.Roberts, R.D.Thompson.

[22] 22. Nano-scale MOSFET Devices Fabricated Using a Novel Carbon-Nanotube-based Lithography.accepted to be presented at Material Research Society (MRS) spring meeting, San Francisco, CA, March19-April1 (2006). J.Derakhshandeh, Y.Abdi, S.Mohajerzadeh, M.Beikahmadi, E.Arzi, M.D.Robertson, J.C.Bennett.

[23] 23. Nano-crystalline silicon thin film transistors on PET substrates using a hydrogenation-assisted metal-induced crystallization technique accepted to be presented at Material Research Society (MRS) spring meeting, San Francisco, CA, March19-April1 (2006). A.Behnam, S.Haji, F. Karbasian, S.Mohajerzadeh, A.Ebrahimi, Y.Abdi, M.D.Robertson.

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