

Curriculum Vitae of M. S. Mousa, Professor of Physics Mu'tah University, JORDAN

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Date of Birth: 6th Jan 1953, Jordan.
Nationality: Jordanian.
Marital Status: Married with four children

Academic Qualifications:

- B.Sc., General Physics, four years course, degree awarded 1976, University of Sulaimanieh, Iraq.
- M.Sc., Physical Methods of Analysis, awarded 1979, University of Aston in Birmingham, U.K. Dissertation title: "Energy spectra of field emitted electrons".
- Ph.D., University of Aston in Birmingham, Doctorate awarded 1984, title of thesis: "A study of field electron emission from composite micro-regimes".

Prizes and Awards:

- 1984 "Aston Graduates Association Prize " for "exceptional contribution to the social and cultural life of the University".
- 1984 Honorary life membership of the Aston University Guild of Students, conferred in recognition for the organization of Aston students International Cultural Weeks.
- 24th July – 24th Sept. 1988: Max-Planck fellowship for Post-doctoral research at the Fritz-Haber-Institut der Max-Planck-Gesellschaft (FHI-MPG), West Berlin (Germany).
- "Fulbright Post-Doctoral Research Fellowship" at Stanford Research Institute (SRI), San Fransisco, USA during the academic year 1991 / 1992.
Awarded the SRI certificates for "Scientific Research Distinction" to me and to Mu'tah Univ.
- "Alexander von Humboldt Stiftung Fellowship" post doctorate research at the Fritz-Haber-Institut der Max-Planck-Gesellschaft, West Berlin (Germany) starting from June 1992 until Sept. 1993. Work resulted in developing new catalyst.

- Resumption of the "Alexander von Humboldt Stiftung Fellowship" Post doctoral research at (FHI-MPG) starting from 1st June until 30th Sept. 1994. This research completed work on the new catalyst that resulted in publishing nine publications in top Int. Research Journals.
- Deutscher Akademischer Austauschdienst (DAAD) Post-Doctoral Research Fellowship, at Bonn University, Germany, 01 June – 31 August 1997.
- HRH Crown Prince Hassan Medal, awarded on the 17th Sept 1998 to distinguished scientists attending the 45th International Field Emission Symposium (IFES).
- King Hussein Medal, awarded on 8th Oct. 1998 in recognition of the distinguished scientific efforts in preparation and organization of the 45th IFES held in Jordan 12 - 18th Sept 1998.
- Members of staff of Mu'tah Univ. Medal awarded in recognition for distinguished efforts to serve Mu'tah University on the national and international levels 15th Dec 1998.
- Mu'tah University Medal awarded and presented by the University president on the 27th Dec 1998.
- "Fulbright Post-Doctoral Research Fellowship" at the Electrical and Computer Engineering Dept., Florida Int. University, USA, during the year 1999 / 2000. Research on developing future Microwave systems continuing up to date with mutual scientific visits and publications at top Int Journals.
- Scientific Post-Doctoral Research Award/Contract for one year at Oak Ridge National Lab. (ORNL), San Fransisco, USA from June 2000 / June 2001.
- Scientific Research Contract for three months (June – August 2000) at Imago Scientific Instruments (Industry of High Technology; manufacturing Local Electrode Atom Probes – most known accurate instrument to measure composition of materials-), Madison, Wisconsin, USA.
- "Alexander von Humboldt Stiftung Fellowship" Post-Doctoral Research at Helmholtz-Berlin Center for Materials and Energy (HBZ), Berlin, Germany, starting from 1st June until 31st August 2008.
- Deutsche Forschungsgemeinschaft (DFG) Post-Doctoral Research Fellowship, at HBZ, Berlin, Germany, 01 June – 31 August 2009.
- Mu'tah University Medal awarded by the Univ. and presented by HRH Princess Muna Al Hussein in recognition for the constructive efforts to serve and develop the Nursing Faculty in addition to continuous service to the university; 20th June 2009.
- Exceptional "Alexander von Humboldt Stiftung Research Award/Fellowship with accompanying research graduate student" at HBZ, starting from 1st June until 31st August 2010.
- January 1st, 2010: appointed as "Humboldt Ambassador Scientist" to Jordan for three years, by the Alexander von Humboldt Foundation in Bonn, Germany. This appointment was extended to the maximum allowed period for three more years till 31st Dec 2015.

- Sept. 2009 –August 2011 awarded a grant (Feodor Lynen Stipendium) to cover the expenses of a German scientist to spend two years at Mu'tah Univ. researching at the Materials Technology Lab, jointly supervising graduate students and assisting in teaching advanced courses.
 - Oct 6th, 2010, awarded the Medal of the Jordanian Astronomical Society at its 23rd Anniversary Ceremony. The festival was held under the patronage of HRH Prince Faisal Bin Al-Hussein at the Royal Cultural Center in Amman.
 - April 10th, 2011, awarded the Medal of the "2nd Int. Conf. for Materials in Jordan", held in Amman between 9-11 April 2011.
 - Post-Doctoral "Alexander von Humboldt Stiftung Fellowship" at Germany, starting from 1st June until 31st August 2012.
 - Scientific invitation for visiting Kemnitz University for Technology, Kemnitz, Germany 31st August till Sept 5th, 2012.
 - Awarded a Post-Doctoral "Alexander von Humboldt Stiftung Research Fellowship" starting from 1st June until 31st August 2013.
- From the research at HZB during the last six years, two new materials for high temperature applications has been developed
- Scientific invitation for visiting Rostock Univ., Rostock, Germany, August 2014.
 - Awarded a Post-Doctoral "Alexander von Humboldt Stiftung Research Fellowship" Helmholtz-Berlin Center for Materials and Energy (HBZ), Berlin, Germany starting from 1st June until 31st August 2016.
- A new third material for high temperature applications is under development

Patents:

- 26 July 2000; U.S. Provisional Patent Application Serial: 60/220, 862
- 5 Feb. 2001; The Commissioner of patents issued a patent for the joint invention with Professor Thomas F. Kelly, entitled "Resin-coated carbon-fiber cathodes: superior electron source".

Research Gate:

RG Score: 34.06

This score is higher than 92.5 % of ResearchGate members

h-index: 15 (RG) &

h-index: 17 (Google Scholar) & i10-index: 34. 1067 Citations

Research Papers and Articles: 148

Donations of Equipment:

- 1993/4 the Alexander von Humboldt Stiftung "AvH" donated a LEED AUGER instrument, to measure composition of materials, upon the success of the research project carried out at the Fritz-Haber-Institut der Max-Planck-Gesellschaft in Berlin.
- 1995 the Alexander von Humboldt Stiftung "AvH" donated an upgrade to the LEED AUGER instrument, installed at the "Materials Technology Lab." of the Dept. of Physics, Mu'tah Univ.
- 1992-5 The FHI-MPG donated several other electronic and ultra high vacuum (UHV) equipment and pumps to complement a surface analysis research facility at Mu'tah Univ. The president of the Univ. officially received them.
- 1994/5 a Philips Transmission Electron Microscope TEM 300 was donated, installed and operated in Mu'tah University as a result of the collaboration existing with Philips and the Fritz-Haber-Institut.
- Similar Philips donated Transmission Electron Microscope was obtained for the Hashemite University (Zarqa), 1996.
- Similar Philips donated Transmission Electron Microscope was obtained for the the University of Jordan (Amman) 1997. Royal Jordanian Airlines kindly shipped the microscope without any charges.
- 1996/7 Donations, worth hundreds of thousands of D.M., of Periodicals and Books were obtained, for the library of Mu'tah University, from the German DFG and the Ministry of International Communication.
- Sept. 2008 the AvH donated a Portable computer for fast data acquisition.
- August 2016 Technical university of Berlin and HZB donated valuable materials for research.
- Nov 30th 2016, Prof. Dr. John Banhart, Helmholtz Center Berlin for Energy and Materials, confirmed to me that "The Center obtained all approvals to export the highly advanced piece of equipment the **Field Ion Microscope FIM** as a donation and arrangements will be made for relocation of the Microscope." This instrument does only exist in advanced countries and would worth about a million Euro; thus providing our researchers with master piece of equipment. It enables studying single atoms, films growth and single-atom surface diffusion from metals ... etc.

Membership in Scientific Institutions:

- Fellow (elected) of the Institute of Physics (UK).
- Member of the European Physical Society (Switzerland).
- Member of the International Field Emission Society.
- Member of the Association of Jordanian Physicists and since 2008 till now, President elect of the Jordanian Physics Society
- Senior member of the IEEE (The Institute of Electrical and Electronics Engineers; USA)

- Elected member of the inaugural class of International Field emission Society (IFES) 2015.
- "IFES Fellow" title (elected) of the International Field Emission Society-2016, on June 16th, 2016 at Gyeongjo, South Korea and awarded:
"For recognition as an eminent and outstanding scientist in the field of field emission, field ionization, and related phenomena".
- Member of the Max-Planck Alumni Association (MPAA).

Career Resume:

- 1st Feb - 30th August 1977; Lecturer of Physics at the "Technical School of the Royal Jordanian Airforce".
- 17th Sept 1985 - May 1990; Assistant professor of Physics, Dept. of Natural Sciences, Mu'tah University, Jordan.
Responsible for formulation of educational plans in physics, setting up physics laboratories, developing new undergraduate courses in applied physics.
Particular attention was being paid to establish a Surface Physics Research Facility.
- May 1990 - May 1996; Associate professor of Physics.
- Sept 1994 - Sept 1995; Head of the Dept. of Physics.
- 9 May 1996; Full professor of Physics in the Dept. of Physics, Mu'tah University
- 8 June 1996 - 1 July 1997; appointed as the University President's Advisor for International Affairs.
- 14 Oct 1996; appointed by the German Academic Exchange Service (DAAD) on pre-selection committee of the candidates for Doctorate scholarships to Germany, Then I was appointed on the same committee for the following years: 2001, 2003, 2004, 2006 till 2015.
- 2 Jan 1997; elected as the president of the "Jordanian Club of Humboldt Fellows (JCHF)" and held this position till March 2006.
12 April 2008, re-elected as president of JCHF till present.
- 1996/7 appointed at the Editorial Board of the "Mu'tah Journal for Research and Studies".
- 17 Sept 1998 elected as the General Secretary of the International Steering Committee (ISC) of the International Field Emission Society and served in this post till July 2004.
- Sept. 1999 the Senior Guest Editor of the Proceedings of the 45th Int. Field Emission Symposium (IFES) published by Elsevier, North Holland, as two parts in Ultramicroscopy and Mat. Sci. Eng. A, that were also bound in one volume.
- 1999, chosen by The American Biographical Institute for distinguished standing and conferred with an honorary appointment to the "Research Board of Advisors".
- Appointed as a member of the Advisory Board to organize IFES' 2001 which was held in Berlin, Germany between the 29 July – 3 August 2001.
- 31 July, 2001, Chairman of the workshop: Low-Macroscopic-field electron

emission held during IFES'2001.

- 2001/2 appointed on the Editorial Board of the "Mu'tah Journal for Research and Studies".

- 18 Feb 2002; appointed as the University President's Assistant for Scientific, External and International Affairs.

- 1 Sept. 2002; appointed as the Dean of the Faculty of Nursing for two years.

- 15 Sept. 2002, appointed as a member of the committee for appointments and promotions at Mu'tah University.

-7-10 Oct., 2003; Amman, participating at the 2nd Int. Conf. of the Royal Jordanian Medical Services.

- 1 Sept. 2004; re-appointed as Dean of the Faculty of Nursing for two more years.

- 18 July 2006; elected as a member of the International Steering Committee (ISC) of the International Field Emission Society (IFES) for six years.

- 2 July, 2005; Participating at the Conf. "Progress in Jordan national drug policy towards implementing essential drug test"

- 2006/2007; appointed on the Scientific Research Council of the Al al-Bayt University, Mafraq, Jordan during the sabbatical year spent at the university.

- Jan 2007; appointed by the Ministry of Higher Education and Scientific Research at the Committee assigned the task to evaluate the performance of the "Scientific Jordanian Journals" that are issued by the Ministry and Jordanian Universities.

- Jan 2007; appointed by the Higher Education Ministry on the Editorial Board of the "Jordanian Journal of Physics".

This appointment was renewed at Jan 2010, 2013 and 2016 for three more years.

- Oct 2008; elected as president of the administrative committee of the Jordanian Physics Society.

- 2008/9 appointed member of the Graduate Studies Council / Princess Sumaya University for Technology (PSUT).

- 17 Feb. 2009; Member of the accreditation committee to study the application for accreditation application from JUST, Irbid, Jordan.

- 1-2 April 2009; participating at the Conf. entitled "Euro-Jordanian Renewable Energy Conference 2009" (EJREC). The Conf. that was patronized by His Majesty King Abdullah II, deputized by HRH Prince Hamzah bin Al Hussein, has been organized by Jordan Europe Business Association (JEBA).

- May, 2009 Editor of the Complete Works of the 1st Int. Conference on Materials in Jordan (ICMJ).

- Nov 4th, 2009 appointed by the Ministry of Higher Education on the Board of Trustees of Amman Applied University for four years.

- April, 2010 Guest Editor of the Proceedings of the 1st Int. Conference on Materials in Jordan (ICMJ) published by The Jordan Journal of Earth and Environmental Sciences (JJEES).

- Nov 11th, 2010; unanimously elected as president of the administrative committee of the Jordanian Physics Society for three years.

- Dec 18th, 2013; elected again as president of the administrative committee of the

Jordanian Physics Society for three years.

- May 7 – 9, 2010; PSUT, participated at the Int. Conf. about "Distinction in Education and creativity"

- Dec 28th, 2010; supervised the master theses of Khalil O. Mussa titled "Field electron emission from insulator coated tips". Khalil was given student training on student fellowship at University of Alabama, USA that included attending Int. specialized Conf. This resulted in three publications including the Journal of "Ultramicroscopy" by Elsevier.

Several master thesis were supervised after that.

Since then, continuously supervising six graduate students. One, Alaa' Al-Qudah graduated at May 2016 with five papers published in Int. Journals and published another four papers after. Samer daradkek published five papers from his M.Sc. thesis and altogether ten papers in Int Journals.

Almost all those students were and are given scientific and technological training during the summer, on student fellowships in various research institutes and universities in Germany, USA and Poland.

Upon success in their training, they get offers to do a Ph.D. as some did, graduated and some are currently doing their Ph.D. abroad.

- April, 2011 Guest Editor of the Proceedings of the 2nd Int. Conf. on Materials in Jordan (ICMJ) published in two volumes by The Jordan Journal of Earth and Environmental Sciences (JJEES) and the Jordan Journal of Physics (JJP).

- April 23rd organized at Yarmouk University in Irbid a lecture about "Fulbright scholarships for graduate studies and postdoctorate research in USA" with the participation of its director in Jordan Alan Mcnamara. This resulted in a Fulbright scholarship to a Prof. at the Dept. of Physics.

- April 30th organized at Yarmouk University in Irbid a lecture about "Scientific day for friendship and cooperation between Jordan and Germany in cultural and scientific fields" with the participation of JCHF, DAAD and the Cultural attachee of the German Embassy. The last two activities were organized during the sabbatical year 2011/2012 spent at Yarmouk University.

- Nov 15th, 2012 appointed on the council of "Centre of Theoretical and Applied Physical Sciences" of Yarmouk University.

- Jan 2013; appointed by the Scientific Research Support Fund on the Editorial Board of the "Jordanian Journal of Physics" for three years.

- Amman, Jordan, 19th Sept 2013 till 18th of Nov. 2015, appointed as a member of the committee for Basic Sciences of the Scientific Research Support Fund (SRSF).

- Nov 15th, 2013 appointed by the Ministry of Higher Education on the Board of Trustees of Amman Applied University for another four years.

- April, 2014 Guest Editor of the Proceedings of the 3rd Int. Conf. on Materials in Jordan (ICMJ) published in several volumes by The Jordan Journal of Earth and Environmental Sciences (JJEES), The Jordan Journal of Biological Sciences (JJBS and the Jordan Journal of Physics (JJP).

- Amman, Jordan, 12th July 2014, appointed, by the Administrative Council of the

Scientific Research Support Fund (SRSF), as deputy for the director of the committee for Basic Sciences of the Fund.

- Amman, Jordan, 18th Nov 2015, appointed, by the Higher Education council of the Ministry of Higher Education and Scientific research on the Administrative Council of the Scientific Research Support Fund.

- Dec. 2015, appointed on the Academic Committee of the SRSF

- Oct 2016 appointed by the administrative Council of the SRSF to be on a committee to develop regulations of the fellowships awarded to outstanding students at Jordanian universities.

- Sept. 2016 appointed by the administrative Council of the SRSF to chair a committee to evaluate the National Journals supported by the Fund

- Oct 2016 appointed by the administrative Council of the SRSF to be on a committee to organize lists of equipment purchased by the SRSF and exist at various institutions in Jordan to have them available for Jordanian researchers.

- During service at Mu'tah University, served on numerous committees.

Oct. 2016, was the last appointment was to be a member on the Scientific research committee of the university.

-Oct 11, 2016 Assigned for two years, as an editorial board member for the Int. peer-reviewed Journal "Applied Microscopy" (AM), the official Journal of the Korean Society of Microscopy (KSM) which covers fields of tech. developments in new microscopy methods, instrumentation and applications to materials science.

-Amman, Jordan, 6th Dec. 2018, appointed as a member of the committee for Graduate studies of the Scientific Research Support and Innovation Fund at Ministry of Higher Education & Scientific Research of Jordan (SRS&IF).

- Amman, Jordan, 3rd April 2019, appointed, by the Administrative Council of the Scientific Research Support Fund (SRSF), on the committee for Basic Sciences of the Fund.

- Sept., 2019 Appointed Chairman of the Scientific Research Committee of the Faculty of Science and also that of the Dept. of Physics, Mu'tah University.

- Amman, Jordan, Oct. 23rd, 2019 appointed as Vice President to Mu'tah University, Al-Karak, Jordan.

International Activity:

- West Berlin (Germany), 6th – 11th July 1986: attended the 33rd "International Field Emission Symposium" (I.F.E.S.) and presented a paper titled "Hot electron emission from composite metal-insulator microemitters".

- Trieste (Italy), 17th June – 8th July 1987: a study visit to the "International Center for Theoretical Physics", where a paper was accepted and published as Internal Report IC/87/161, with the title "Study of field induced hot-electron emission using the composite microemitters with varying dielectric layer thickness". This paper was also published in J. Phys. (Paris).

- Osaka (Japan), 12th – 19th July 1987: attended the 34th "I.F.E.S." and presented two papers titled "Field emission from a new type of electron source" and "Study of field induced hot-electron emission using the composite microemitters with varying dielectric layer thickness".
- Birmingham (UK), 30th July – 27th Sept. 1987: post-doctoral research at Aston University in Birmingham.
- Crowly (UK), 14th –18th Sept. 1987, attended a vacuum technology course at "Edwards High Vacuum PLC".
- Manchester (UK), 11th – 14th April 1988: attended the First "European Vacuum Conference" and presented a paper titled "Characteristics of tungsten substrate with Al₂O₃ coatings under U.H.V. conditions".
- Piechowice (Poland), 9th – 14th May 1988: attended the 12th "International Seminar on Surface Physics" (I.S.S.P.) and presented a paper titled "Cold cathode field emission using both Al-resin and Au-resin coatings on tungsten substrate".
- Oak Ridge (U.S.A.), 17th – 23rd July 1988: attended the 35th "I.F.E.S." and presented a paper titled "Effect of lacomit films on cold-cathode hot-electron emission".
- West Berlin (Germany), 24th July – 24th Sept. 1988: post-doctorate research in the Fritz-Haber-Institut der Max-Planck-Gesellschaft on a Max-Planck fellowship. The title of the investigation was "The kinetics of adsorption and thermal desorption of NO on stepped Pt & Rh single crystal surfaces".
- Piechowice (Poland), 22nd – 27th May 1989: attended the 13th "I.S.S.P." and presented a paper titled "A new perspective on the hot electron emission from metal-insulator microstructures".
- Birmingham (U.K.), 3rd July – 18th August 1989: post-doctoral research at Aston University, Birmingham. The second stage of the research project started during the summer of 1987 was completed.
- Oxford (U.K.), 30th July – 4th August 1989: attended the 36th "I.F.E.S." and presented a joint paper titled "Factors influencing the stability of cold-cathodes formed by coating a planar electrode with a metal-insulator composite".
- (U.S.S.R.), 16th – 30th Jan. 1990: to give lectures and investigate the possibility for joint investigations, upon the invitation of: Academy of Sciences of the U.S.S.R. in Moscow and Leningrad, Academy of the Ukranian SSR in Kiev, Electro-Technical Institute of Communications in Leningrad, and Bashkir State University in Ufa.
- Albuquerque (U.S.A.), 29th July – 3rd August 1990: attended the 37th "I.F.E.S." and presented a paper titled "Effect of an internally conductive coating on the electron emission from glass tips".
- Viena (Austria), 5th – 9th August 1991: attended the 38th "I.F.E.S." and presented a paper titled "Field electron emission studies on zinc oxide coated tungsten microemitters". Another joint paper was presented (by Madenach and Abend) that was titled "Influence of electrostatic fields on binding energy (NO on Rh)".
- SRI Int. (Menlo Park, California, U.S.A.), 10th August 1991 – 1st June 1992, on

sabbatical leave from Mu'tah Univ., as an "SRI International Fellow". This research program was carried out after being awarded a "Fulbright Post-Doctoral Research Fellowship" during the academic year 1991/1992.

- Fritz-Haber-Institut der Max-Planck-Gesellschaft (Berlin, Germany), 1st June 1992- Sept. 1993, on leave from Mu'tah Univ. This post-doctoral research program was carried out after being awarded an "Alexander von Humboldt Stiftung" fellowship for 16 months.

- Halifax (Canada), 10th – 14th August 1992: attended the 39th "I.F.E.S." and presented three papers titled "Observations of work function changes in field-emitter arrays", "Hydrogen and acetylene adsorption on micro-fabricated field emitter arrays" and "Analysis of some properties of metal-glass microemitters subjected to strong electric fields".

- Kudowa (Poland), 5th – 10th Oct. 1992: attended the 16th "I.S.S.P" and presented four papers titled "Investigation of in situ carbon coating on field emitter arrays", "Observations on field forming process of ZnO-W cold cathodes", "Study of hydrogen plasma on microfabricated field-emitter arrays", and " 'Switch-on' phenomena in field electron and field ion microscopy".

- Nagoya (Japan), 2nd – 6th August 1993: attended the 40th "I.F.E.S." and presented two papers titled "Analysis of the switch-on phenomenon associated with emission characteristics." and "Surface Analysis of the PdCu(110) single crystal alloy at different segregation rates."

- Warwick (U.K.), 30th August – 4th Sept. 1993: attended the 13th European Conference on Surface Science and presented a paper titled "Adsorption and desorption of oxygen and nitrogen on PdCu(110) single crystal alloy surfaces."

- Fritz-Haber-Institut der Max-Planck-Gesellschaft (Berlin, Germany), 7th - 27th Jan. 1994, post-doctoral research.

- Fritz-Haber-Institut der Max-Planck-Gesellschaft (Berlin, Germany), 1st June – Sept. 1994, post-doctoral research program was carried out after being awarded a resumption to the "Alexander von Humboldt Stiftung" fellowship for four months.

- Kudowa (Poland), 6th – 11th June 1994 : attended the 17th "I.S.S.P" and presented two papers titled "Oxidation of CO on PdCu(110) single crystal alloy catalyst: steady state, hysteresis and related surface phenomena" and "Cold-cathode emission from Cu-broad area electrodes overlaid by resin-ZnO composite".

- Rouen (France), 11th – 15th July 1994: attended the 41st "I.F.E.S" and presented a paper titled "Field electron emission properties of the MgO/W system."

- Koln (Germany), 11th – 16th June 1995: Scientific visit to educational establishment.

- (Germany), 24th July – 11th August 1995: Scientific visits to investigate the possibility for joint collaboration and to establish academic exchange program, upon the invitation of: Bonn Univ., Alexander-Von-Humboldt Stiftung, Erlangen Univ., VSI, Free Univ. of Berlin, Fritz-Haber Institut and BESSY.

- Madison (U.S.A.), 7th July – 11th August 1995: attended the 42nd "I.F.E.S." and

- presented a paper titled "Electron emission from carbon fibre tips".
- Polanica Zdroj (Poland), 10th – 14th June 1996: attended the 18th "I.S.S.P." and presented two papers titled "CO chemisorption on PdCu(110) : a work function study" and "Thermal desorption spectroscopy analysis of oxygen from Pd-rich surfaces of PdCu(110) single crystal".
 - St. Petersburg (Russia), 7th – 12th July 1996: attended the 9th Int. Vacuum Microelectronics Conference (9th IVMC) and presented a paper titled "The influence of the applied electric field on the energy spectra of electrons emitted from carbon fibre microemitters".
 - Moscow (Russia), 14th – 19th July 1996: attended the 43rd "I.F.E.S.".
 - Bonn (Germany), 16th – 23rd Feb. 1997: attending the international meeting for the presidents of the Alexander von Humboldt clubs around the world.
 - (Germany), 18th – 26th April 1997: visiting various scientific institutions in Berlin, Leipzig, Hannover and Bonn upon the invitation of the Friedrich-Ebert-Stiftung.
 - Bonn (Germany), 10th June – Sept. 1997: Post-doctoral research at the Physical Chemistry Dept. of Bonn Universitat on a DAAD fellowship.
 - Tsukuba (Japan), 6th – 11th July 1997: attended the 44th I.F.E.S. and presented a paper titled "Influence of the applied electric field and gas adsorption on the energy spectra of electrons emitted from carbon fibre microemitters".
 - Erlangen (Germany), 23rd July 1997, gave an invited talk at Erlangen University.
 - Irbid (Jordan), 12th – 18th Sept. 1998, I chaired the 45th I.F.E.S., held under Royal Patronage. I presented 5 papers titled "In-situ transition mechanism from cold to hot electron emission", "The effect of anode voltage temperature on the molybdenum field-emitter arrays", "Dependence of NFI of Tetracyanoethylene (TCNE) on the structure of the cathode coating, formed by TCNE exposition under various conditions", "Field electron emission properties of the MgO/W system" and "Stability considerations of metal-diamond-vacuum microemission regimes".
 - FIU (Dept. of Electrical and Computer Eng., Florida Int. University, Miami, USA), 1st Sept. 1999 – 31st May 2000, on sabbatical leave from Mu'tah Univ., as a visiting professor. This research program was carried out after being awarded a "Fulbright Post-Doctoral Research Fellowship" during the academic year 99/2000.
 - Miami (USA), 1st – 3rd Nov. 1999: I attended the TECH EAST 1999 – 2009 Conference.
 - Orlando, Univ. of Central Florida, USA, 12th – 17th March 2000, attended the 3rd joint meeting of the Microscopy Society of America and the American Vacuum Society and presented three papers titled "Prototypes using composite field emission sources for generating microwave radiation by laser-assisted field emission", "Experimental measurements of current enhancement and modulation due to laser-assisted field electron emission" and "Simulations of devices generating microwave and THz radiation by resonant laser-assisted field emission".

- Washington, D.C., USA, 12th – 15th April 2000, attended the Fulbright Visiting Scholar Conference "Modern democracy in a Changing World".
- Oak Ridge National Laboratory, Tennessee (USA), June 2000 – Feb. 2001, fellowship doing research at the Microscopy & Microanalytical Sciences / Metals and Ceramics Division working on a novel approach to gaseous field ion sources for focused ion beam applications.
- Feb. – May. 2001 fellowship doing research on developing electropolishing and ion milling techniques to fabricate Atom Probe Field Ion Microscopy (APFIM) specimens of bulk molybdenum-based alloys.
- Pittsburgh (USA), 23rd – 28th July 2000, attended the 46th I.F.E.S. and presented 5 papers titled "Precipitate-hardened NiAl alloys as innovative gaseous field ion sources", "Comparison between experimental and computer simulations of current-voltage (I-V) characteristics of dielectric-coated photon-stimulated field emitters", "Prototypes using metal, carbon fiber and composite field emission sources modulated by a laser beam", "Measurement of field emission current variations by an amplitude modulated laser beam" and "Simulations of photon-assisted tunneling using the Fokker-Planck equation to model the scattering of electrons within the emitting metal tip".
- Madison (USA), 4th – 7th Feb. 2001, participating in a scientific workshop at the University of Madison in Wisconsin.
- Madison (USA), June – 20th August 2001, participating in a scientific research program on the deployment of electron sources in technology with the University of Madison in Wisconsin and the University of Tennessee, Knoxville.
- Berlin (Germany), 29th July – 3rd August 2001, I attended the 47th I.F.E.S. and presented 8 papers titled "I-V characteristics of a neon focused field ion source", "Grain boundary segregation in high ductility Zr-, B- and C-doped molybdenum weldments", "Effects of hot electron emission on a low conductivity TCNE-polymer layer with FIM surface corrugation study", "Design of field emitter devices for microwave and terahertz applications", "Measurement of bandwidth for generation of radiofrequency signals with carbon fiber field emitters", "Field-Forming process and emission current switch-on of carbon fiber field microemitters", "Stabilization of carbon fiber cold field emission cathodes with a dielectric coating" and "Lifetime and emission stability of carbon cathodes."
- Alicante (Spain), 12th – 16th Nov. 2001, I was invited to attend the 3rd European Field Emission Workshop and presented a **keynote Lecture** titled "Field electron emission from composite microemitters".
- Bonn (Germany), 8th – 12th May 2002, attended the conference for the presidents of the Humboldt Clubs around the world.
- Lyon (France), 7th – 11th July 2002: attended the 48th "I.F.E.S" and presented 5 papers titled "Design, fabrication, and testing of prototypes using Laser-Assisted Field Emission to generate signals from 1 – 10 GHz.", "Fabrication and testing of dielectric coated field emitter tips for devices generating microwave signals by Laser-Assisted Field Emission", "Measurements of low-frequency resonance in

Laser-Assisted Field Emission", "Measurements of current modulation in Laser-Assisted Field Emission with carbon fiber tips" and "I-V characteristics of carbon-fiber cold field-emission tips with a dielectric coating".

- Cairo (Egypt), 27th August – 1st Sept. 2002.

- Cairo (Egypt), 1st Feb. – 7th Feb. 2003.

- Graz (Austria), 12th – 16th July 2004: attended the 49th "I.F.E.S" and presented an **invited talk and review paper** titled "The influence of the dielectric coating on the field emission mechanism from field emitting electron sources".

- Mombay (India), 19th – 21st Feb. 2006: attended the 3rd Western Regional Humboldt Colloquium and presented scientific talk titled: "Transfer mechanism from cold to hot electron emission"

- Penang (Malaysia), 21st - 25th Sept. 2006: attended the AVH-Kellog on "Biotechnology and scientific advances for socio-economic benefits" and presented a talk titled "Characteristics of carbon fiber cold field-emission tips with a dielectric coating".

- Guilin (China), 17th – 20th July 2006: attended the 50th "I.F.E.S" and presented 4 papers titled "Evaluation of a neon focused field ion source: fabrication and characteristics", "Measurement of anomalous high-frequency oscillations during field emission and their possible significance in pulsed field emission", "Time-dependent response of field emission by single carbon nanotubes", and "Simulation of sub-femtosecond response in laser-assisted field emission".

- Goteborg (Sweden), 18th – 21st June 2007: attended the Workshop on "Current Issues in Atom Probe Tomography" and Int. Steering Committee Meeting of IFES in Chalmers University of Technology.

- Penang (Malaysia), 25th - 29th Oct. 2007: attended the AVH-Kolleg on "Aquatic Sciences cum Enhancement of the Agro-Industry" and presented a talk titled "The Dead – Red Sea Canal Project: Modern Technology on Future Prospect for New Life".

- Rouen (France), 11th – 15th July 2008: attended the 51st "I.F.E.S" and presented a paper titled "Dependence of NFI of Tetracyanoethylene (TCNE) on the structure of the cathode coating, formed by TCNE exposition under various conditions."

- Amman (Jordan), 12th April 2008: organized through the JCHF and Goethe-Institute in Amman the "1st Workshop on Materials in Jordan".

- Berlin (Germany), 1st June – 31st August. 2008: Post-doctoral research at the Hahn Meitner Institute for Materials, on a Humboldt fellowship.

- Berlin (Germany), 19 – 23th Jan. 2009: AvH Alumni Network Conference and Bonds of trust 2009 – Germany Alumni in Tomorrow's World organized by and held at the German Foreign Ministry.

- Amman (Jordan), 4-6th March 2009: Initiator and Director of "The 1st Int. Conf. on Materials in Jordan" – Humboldt Kolleg; patronized by the Prime Minister of Jordan. The conference was organized by the JCHF in cooperation with the German-Jordanian Univ. (GJU) and Jordan atomic Energy Commission (JAEC).

- Amman (Jordan), 10 – 11th May 2009, helped organizing and attended the "German Middle East Int. Conference" under Royal Patronage of HM King Abdullah the II. Where HRH Princess Sumaya Bint al Hassan gave a valuable speech and analysis at the conference.

A meeting for the Humboldt Awardees from the Middle East held a conference on the second day.

- Berlin (Germany), 10th June – 5th Sept. 2009: Post-doctoral research at the Helmholtz Center for Materials and Energy on a DFG fellowship.

- Berlin (Germany), 17 – 23rd Aug 2009, participated at the "Thermec Int. Conference" with 1200 participants. Chaired a session "Composite Metallic Materials".

- Amman (Jordan) 9 – 14th Nov, 2010, participated at the Middle East Doctoral Student Workshop "Communicating the Chemical Sciences"

- Amman (Jordan) 15-19th Nov, 2009, participated at the Int. Conference on Frontiers of Chemical sciences IV: Research and Education in the Middle East. A Bridge to Peace and Int development" (Malta-IV).

- Amman (Jordan), 10-12th April 2010: Director of "The Workshop on Materials in Jordan" – Humboldt Kolleg; patronized by HE Prof. Khaled Toukan the Chairman of the workshop, Director of the Jordan Atomic Energy Commission. The workshop was held at Sumaya University for Technology in cooperation with the German-Jordanian University (GJU), Jordan atomic Energy Commission (JAEC), Yarmouk University and Mu'tah University.

- Wroclaw (Poland) 26-27th May 2010, participated at the High Field Nano Science (HFNS) workshop and presented three papers titled a paper titled "Characteristics of a high brightness ion source employing precipitants in hardened alloys.", "Dependence of Negative Field Ionization of Tetracyanoethylene (TCNE) on the structure on the structure of the cathode coating, formed by TCNE exposition under various conditions." and "Influence of tip curvature on field electron emission characteristics."

- Rabat (Morocco) June 21 – 23rd, 2010 (Humboldt Kolleg) University Research-Industry:Partnering Opportunities Conference and presented a talk titled "Jordanian-German Partnering: Distinguished Successful Story and Model."

- Sydney (Australia) 4-8th July 2010 attend 52nd IFES and presented two papers titled "Modification of Mo-Si alloy structure by alloying additions of Zr" and "Study on the influence of an improved image potential on the CFE current "

- Ismaylia (Egypt) Sept 24 – 26th, 2010 (Humboldt Kolleg) "Green Chemistry for clean environment"

- Oran (Algeria) Dec 12 – 14th, 2010 (Humboldt Kolleg) 2nd North African Conference on computational Physics and Chemistry and presented a paper titled titled "Characteristics of a high brightness gaseous field ion source employing tungsten-carbon doped NiAl needles."

- Amman (Jordan), 9-11th April 2011: Director of "The Int. Conf. on Materials in Jordan" – Humboldt Kolleg; under the title "Recent Developments & Future

Resources" patronized by HE Prof. Wajih M. Owais the Minister of Higher Education and Scientific Research with HE Prof. Khaled Toukan; the Chairman of the Conference, Director of the Jordan Atomic Energy Commission. The workshop held at Sumaya University for Technology was organized by the JCHF in cooperation with the German-Jordanian University (GJU), Jordan atomic Energy Commission (JAEC), Yarmouk University (YU), Mu'tah University (MU), Jordan University of Science and Technology (JUST), University of Jordan (UJ), Al al Bayt Univerristy (AaBU), Hashemite University (HU).

The ICMJ Humboldt Kolleg was *dedicated to Gisela Janetzke* who served thirty years of dedicated service towards international cooperation and friendship.

- Rome (Italy), 25-27th May 2011, attended Int Conference organized by Universita di Firenze and Assoc. Italiana AVH. A memorandum of understanding "AvH Med Net initiative MOU" to form a network between the Mediterranean Humboldt Clubs (of Italy, Greece, Spain, Masadonea, Maghreb and Jordan) was also signed by Prof. Schwartz the president of Humboldt Foundation.

- Berlin (Germany), 2 June – end of August, 2011 : Post-doctoral research at the Helmholtz Center for Materials and Energy on a Humboldt fellowship working on materials for high temperature applications.

- Monastir (Tunis), 23-25th June 2011, attended the Humboldt Kolleg – Research to Applications & Markets and presented a talk titled "Field Electron Emission from Composite Microemitters".

- Berlin (Germany), 27-29th Jun 2011, attended the Annual General Meeting of the AvH in Berlin and had the honor to meet with the German President Christian Wulff on June the 28th and had a photograph with him with members of the JCHF and the Maghreb AvH Alumni Association.

- Marrakech (Morocco) 09-11th March, 2012, attended the Humboldt Kolleg / Int. Conf. "New Prospects for Science and Education in the MENA region" giving a talk titled "Characterizing a new composite material".

- Irbid (Jordan), Sept 2011- Sept 2012, spending a sabbatical year at the Dept. of Physics, Yarmouk University.

- Alabama (USA) 21st - 25th May 2012 attended the 53rd IFES, chairing the session: "High Field Sciences and Sources 1" and presented three papers titled "Information extraction from FN plots of differently coated tungsten tips", "Information extraction from FN plots of clean tungsten tips" and "Illustrating field emission theory by using plots of transmission probability and barrier strength".

- Germany; scientific visits to the Dept. of Physics at Chemnitz University from 31st Aug – 4th Sept. and to Berlin from 5th Sept. – 9th Sept., 2012 to enhance scientific collaboration.

- Cairo (Egypt) 28th – Oct 1st, 2012 attending the Humboldt Kolleg at the German University in Cairo giving an invited talk.

- Amman (Jordan) 12th - 13th Nov 2012, attending the German Rectors' Conf. (DIES-Seminar): "Enhancing internationalization and managing partnerships

between higher education institutions in Germany and Jordan"

- Venice (Italy) 30th May – 1st June 2013, Venice Int. Univ., attended the AvH Kolleg Italian Association meeting and discussed the AvH Mediteranian Network Projects specially the clean energy one. A talk was given at the Conf.

- Safax (Tunis) 28-30 June 2013, attended the Humboldt Kolleg "Research to Applications & Markets II" and gave a talk.

- Poznan (Poland) 4 – 7th July 2013, attended the 9th Congress of the "25 Years Societas Humboldtiana Polonorum" With participation of honorary guest the Nobel Price Winner the Bio Physicist Prof. Erwin Neher.

- Berlin (Germany), June – August 2013 awarded Humboldt Fellowship to complete research about development of new material for high temeprature applications.

- London (UK), Fri 15th Nov 2013, invited to the Institute of Physics (IOP) to attend the 2013 Awards Dinner of the Institute at the Lancaster Terrace, London W2 2T to celebrate "achievements of the Physics community which recognize oustanding research".

- Malta, Malta VI "Frontiers of Science: Research and Education in the Middle East" 10 – 15 Nov 2013.

- Amman (Jordan), 3-5th April 2014: Director of "The Int. Conf./ Humboldt Kolleg; "Building Int. Networks for enhancement of Research in Jordan" patronized by HRH Princess Sumaya bint El Hassan with HE Prof. Khaled Toukan the Chairman of the conference. The Conf., held at PSUT and the GJU, was organized by the JCHF in cooperation with Princess Sumaya University for Technology, the German-Jordanian University (GJU), Jordan atomic Energy Commission (JAEC), Yarmouk University (YU), Mu'tah University (MU), Jordan University of Science and Technology (JUST), University of Jordan (UJ), Al al Bayt Univerrrsity (AaBU), Hashemite University (HU), Zarka Private University.

- Stuttgart (Germany) August 31st - 5th Sept 2014 attended the 54th IFES, together with two of my graduate students from Mu'tah university, chairing the session: "High Field Nano Sciences" and presented three papers titled "Microwave harmonics generated in laser-assisted scanning tunneling microscopy- their significance regarding terahertz sources in laser assisted field emission", "On the orthodoxy test for the I-V characteristics of needle shaped field emitter tips" and "Apex shape analysis of clean and coated tungsten and carbon fiber field emitter tips".

- Torun, Poland, 10 -13th May 2015, participated at the Humboldt Kolleg Int. Conf. on "Ethics in Science & Life, Standards and Dielemas". A talk was given at the Conf.

- Cracow, Poland, 21-23rd June 2015, participated at the Int. Conf. "Progress in Biomedicine and Neuromedicine" – Workshop with Nobel Price Winner the BioPhysicist Prof. Erwin Neher. A talk was given at the workshop.

- Berlin (Germany), 2 June – 30th August, 2016: Post-Doctoral research at the Helmholtz Berlin Center for Materials and Energy on an AvH fellowship

developing new materials for high temperature applications.

- Gyeongju (Korea) 12th - 17th June 2016 attended the 55th IFES, APT&M "From Science to Industry". I presented five papers titled: "Analysis of the relationship between the distribution of a dielectric layer on a nano-tip apex and distribution of emitted electrons", "Switch-on phenomena and FEE from MWCNTs encapsulated in glass", "Influence of various types of dielectric epoxy resin on field electron emission properties from the nano and micro scale tungsten and carbon fiber tips", "Enhanced field emission from dielectric coated highly emissive carbon fibers" and "Microwave frequency comb from a semiconductor in a scanning tunneling microscope".

- Sfax, (Tunis), 16th -18th Sept, 2016 attended the 3rd Int Conf. "Research in applications & Markets RAM 2016" and presented a main plenary talk titled "Field electron emission from MW carbon nanotubes and its potential as an electron source". I also chaired the session on "Nanosciences".

- This Conf. was followed by holding, between March 29th – April 1st, 2016 at JUST: "The first Scientific Jordanian Tunisian Forum"

- Al al Bayt University (AABU), Mafrq (Jordan), 27th - 29th April 2017: "The Int. Conf / Humboldt Kolleg; "Jordan Life Sciences Conference for Sustainable development" held at AABU, patronized by HRH Princess Sumaya bint El Hassan with the participation of the key note speaker the Nober Price winner, the biophysicist Prof. Dr. "Erwin Neher" between 100 Int. participants from 28 countries and more than 200 Jordanian Professors and students.

Two volumes of Proceedings were produced (one volumes at JJP and another at Applied Microscopy of Korea)

- Berlin (Germany), 1- 10 August , 2017: scientific visit to the Helmholtz Zentrum Berlin.

- Dortmund (Germany) 10 – 18 August 2017: scientific visit to the Leibniz-Institut für Analytische Wissenschaften – ISAS – e. V.

- Amman, Sept 2017- , spending a sabbatical year at the Dept. of Physics, The UJ.

-Cairo (Egypt) 24 -26 October, 2017: participating at the "Science and management for sustainable development" held at the National research Centre (NRC) that was jointly organized by Japanese SPS and the AvH Alumni.

- Marrakech (Morocco) 4 – 6th April, 2018, participated at the Int. Conf. Humboldt Kolleg "Beacons of hope in the quest for the next Einstein in MENA" organized by the Magreb-AvH Alumni Association hosted by Cadi Ayyad University. A presentation was given titled "New mechanisms to increase the mechanical stability of multi-walled carbon nanotubes (MWCNTs) as an electron source". I participated at a Panel discussion as a Panelist and moderated two other sessions on Energy & on Humboldt cooperation.

- Amman (Jordan) 8 – 9th April 2018: organized a workshop at the JU titled "Materials Science and Technology", in connection with the Seminar activities of the Dept. of Physics, JU, Amman & ICCNA 2018 of JUST.

-Irbid (Jordan) 10 -12th April, 2018 Int Conf. on current nanotechnology and its

applications (ICCNA 2018) held at JUST and presented oral talk titled "New software simulating the full operation of a scanning tunneling microscope, and its application to a working FPGA-based STM". A poster titled "Analysis of generating microwave frequency comb in laser scanning tunneling microscopy with a semiconductor sample" in addition to poster prepared by undergraduate students at JU titled "Hot electron emission from composite metal-insulator micropoint cathodes". The Conf. was patronized by HRH Prince Hamzeh bin Hussein.

- Ohrid (Macedonia) 20 – 23rd April, 2018, participated at The Humboldt Kolleg 2018 titled "At the door of European Union: The role of the science for sustainable development of the Balkan region" and presented a talk titled "21 years of academic & cultural cooperation & networking".

-Amman (Jordan) 1 – 3 May, 2018 attending The 12th Arab Conf. for Astronomy and Space Science & The 7th Islamic Astronomical Conf. Served on the Organisation Committee of the Conf.

-Chisinau (Moldova) 14 – 17 May, 2018 participated at the NATO advanced research workshop SPS.EAP.ARW.G5347 "Functional nanostructures and sensors for CBRN defence and environmental safety and security –FNS-CBRN Defence-2018". A talk was given at the conference titled "Switch-on phenomena in field electron and field ion microscopy".

- Maryland (USA) 10th - 15th June 2018 attended the 56th IFES, Atom Probe Tomography and Microscopy (APT&M) held at National Institute of Standards and Technology (NIST) and presented an oral talk titled "Behaviour and characterisation of various types of carbon nanotubes as field emitting electron source". Additionally posters were presented and titled "Virtual scanning tunneling microscope for training and teaching" "Field emission differences between carbon-black and several types of carbon nanotubes, both embedded in glass tubes", "Characterization of multiwall carbon nanotubes as potential electron source", "Fowler-Norheim plot shape associated with large series resistance", and "Comparative study of field electron emission from single-walled carbon nanotube and multi-walled carbon nanotube mounted on tungsten". I presented five papers titled: "Analysis of the relationship between the distribution of a dielectric layer on a nano-tip apex and distribution of emitted electrons", "Switch-on phenomena and FEE from MWCNTs encapsulated in glass", "Influence of various types of dielectric epoxy resin on field electron emission properties from the nano and micro scale tungsten and carbon fiber tips", "Enhanced field emission from dielectric coated highly emissive carbon fibers" and "Microwave frequency comb from a semiconductor in a scanning tunneling microscope".

-Brno (The Czech Republic) 15 – 26 August 2018 scientific visit upon the invitation of the Institute of Scientific Instruments (ISI) of the Czech Academy of Sciences (ASCR). Joint scientific collaboration started.

- Cooperation with the University of Prague, Physics Dept., with Humboldtian Prof. Jan Franc has also been discussed for improving cooperation.

- Mutah (Jordan) 15 – 19th Jan 2019 Dr Alexandr Knapek from ISI visited Jordan and donated a "Dipping and Etching highly accurate Instrument" to the Materials Technology Lab. of Mu'tah University. The Univ. appreciated the visit, cooperation (MOU has just been signed between both parties) and presented Dr Knapek with the Univ. shield.
- Loveno di Menaggio, Villa Vigoni (Italy) 11 – 14 April 2019, participating at the Int Conf. Kosmos in 21. Century having a presentation at the Conference.
- Amman (Jordan) 2 – 4 May 2019, Co Chairman of ISyDMA 4 – 2019; 4th Int. Conf. on Dielectric Materials and Applications. I presented an oral presentation.
- Harnack House, Berlin (Germany), participated at the conference "Max-Planck Symposium for Alumni and Early Career Researchers", 1 – 4 Sept, 2019.
- Szczecin (Poland) , 12 – 15 Sept. 2019, to participate at the 11th Congress of Societas Humboldtiana Polonorum – Science in the age of Globalization. Gave an invited talk and chaired the session: Natural Sciences.
- Adana (Turkey) Cukurova Univ., 14 – 19 Oct. 2019, on the Scientific Committee of the Int. Conf. on Condensed Matter and Materials Science 2019 (ICCMMS-19)
- Hammamet (Tunis), 21 – 23 Oct., 2019, to participate at the Humboldt Kolleg "4th Int conf. Research to application and Markets" and present oral talk titled "CNTs used in field emission system employed as an electron source". Participant at the opening session and chaired the session "Nanosciences"

National Activity:

- Amman (Jordan), 1st – 9th, Sept. 1985: I attended the 3rd Petra school of Physics.
- Amman, 24th – 26th March 1986: I attended an Int. conference about remote sensing.
- Amman, 24th August – 2nd Sept 1986: I attended " Int. Seminar on appropriate technology in the fields of solar and wind energy applications ".
- 1987; initiating the federation agreement between the Int. Centre for theoretical physics (I.C.T.P.; Trieste, Italy) and the Physics Dept. of Mu'tah University.
- Amman, Univ. of Jordan & Royal Sci. Soc., 28th – 31st Oct. 1987: I attended the "1st Int. Conference for condensed matter".
- Amman, 20th – 24th March 1989: I attended the 2nd Int. Conference for condensed matter.
- Irbid, June 1991: I attended one-week computer course on some computer applications in physics at the "Center for theoretical Physics, Yarmouk University"
- 1990 - 1991: I supervised the process of maintaining some vacuum equipment of the faxenes center that belong to the Ministry of Agriculture and provided a vacuum technology intensive course to the operators of the equipment.
- Amman, 18th – 21st April 1994: I attended the 3rd Int. Conference for condensed matter.
- Jordan, 1st – 3rd Nov. 1997, Director of the First Conference on Materials Science

CMS1, Mu'tah University.

- Jordan, 10th Sept. 1998, organized the International Introductory School about Field Electron, Field Ion Emission, Atom probe and Vacuum Microelectronics that was held at Jordan University of Science and Technology (JUST).
- Jordan, 12th – 18th Sept. 1998, Chairman of the 45th International Field Emission Symposium, held at JUST.
- Jordan, 13th Oct. 2001, elected as an executive committee member for the national team of the Synchrotron project in Jordan (SESAME)
- Jordan, 23rd – 25th Sept 2001, attended the Jordanian 9th Scientific Week organized by the Higher Council for Science and Technology.
- Jordan, 21st – 23rd Sept 2003, attended the Jordanian 10th Scientific Week organized by the Higher Council for Science and Technology.
- Jordan, 18th – 20th Sept 2005, attended the Jordanian 11th Scientific Week organized by the Higher Council for Science and Technology.
- Jordan, 27th – 28th Sept 2006, attended the Jordanian 12th Scientific Week organized by the Higher Council for Science and Technology.
- Jordan, 3rd Sept 2006, spending sabbatical year at the Dept. of Physics, Al al-Bayt University, Mafraq.
- Mafraq, Jordan, 21st March 2007 organized the German-Jordanian Workshop titled: Cooperation between Germany and Jordan – Scholarships and Scientific Research in Germany.
- Jordan, 28th Oct. – 1st Nov 2007, attended the Jordanian 13th Scientific Week organized by the Higher Council for Science and Technology held under the title "Scientific and Technological Parks: Building Knowledge Economy".

- Jordan, 17th – 19th Nov 2007, Sixth SESAME Users Meeting.
- Jordan, 9th – 15th April 2008, organized the scientific visit by Dr. Nelia Wanderka from Hein-Meitner-Institut Berlin to Mu'tah Univ and scientific institutions in Jordan.
- Jordan, 12th April 2008, director of the Surface Science workshop organized by the JCVHF.
- Jordan, 4th – 8th May 2008, director of the 1st scientific week for the Science Faculty of Mu'tah University.
- Amman, Jordan, 1999, member of the Council for Higher studies of Princess Sumaya University fo Technology.
- Amman, Jordan, 26 – 28th Oct 2009, participated at the 2nd Int. Symposium on Nuclear Energy (ISNE-09) and chairman of session IV.
- Amman, Jordan, 7 Nov. 2009, "The 4th Conf. on Scientific Research in Jordan", organized by "Jordan Society for Scientific Research".
- Amman, Jordan, 9-15th Nov, 2009 helped in organizing and participated at the " Middle East Doctoral Student Workshop on "Communicating the Chemical sciences".
- Petra, Jordan, 19th – 21st Nov 2009, Eighth SESAME Users Meeting.

- Amman, Jordan, 16th Jan 2010 organized a reception patronized by HRH Princess Sumaya bint el Hassan to express gratitude to the Humboldt Jordanian University Presidents and vice presidents for distinguished service, in addition to a distinguished group of German and Jordanian personalities who served the cause of science, technology and friendship between Jordan and Germany.
- Amman, Jordan, 27th March 2010 organized a meeting in Amman that resulted in forming "The Network for Cooperation between German and Jordanian-German-Oriented Institutions and Associations in Jordan".
A letter of support and collaboration with the Jordanian Club of Humboldt fellows was sent by HRH Princess Sumaya bint El Hassan and read at the meeting.
- Amman, Jordan, 6th May 2010, 6th National workshop of the Jordanian National Committee, SESAME.
- Amman, Jordan, 7th- 9th May 2010, "Excellence in Education, Current practices, Challenges and Future Trends".
- Al-Karak, Jordan, 10th -12th May 2010, Chairman of the scientific committee of the 3rd Scientific Week of the faculty of Science, Mu'tah University.
- Amman (Jordan) 15 – 17th June, 2010 National Conference for the development of study plans, teaching and learning, and scientific research and hope to present a paper " Professors' development through partnerships: the case of Humboldt"
- Amman, Jordan, 25th Sept 2010, "Returning Experts Program" in cooperation with vJADU seminar about joint masters programs between Germany and Jordan: Water Resources management & "Renewable Energy for MENA region"
- Amman (Jordan) 9th Dec., 2010 Final Conference on European-Jordanian scientific collaboration together with small projects exhibition. Enaugurated by HRH Princess Hassan Bin Talal.
- Al-Karak, Jordan, 5th May 2011, participating at the 4rd Scientific Week of the faculty of Science, Mu'tah University.
- Amman, Jordan 27th April, 2011, gave a talk "Jordanian professor development through Int. cooperation" at the Pharmaceutical Education and requirements of work market.
- Amman, Jordan, 28th April 2011, SESAME Users Meeting.
- Amman, Jordan, 12-14th Nov 2011, SESAME Users 9th Meeting.
- Amman, Jordan, 17th Nov 2011, attending the "Understanding the Arab Spring - Recommendations for Peaceful Transitions to Democracy" organized by The Int Crisis Group (ICG) and the friedrich Naumann Foundation for Liberty (FNF).
- Amman, Jordan, 12th – 14th Nov, 2011, attended the 9th SESAME Users Meeting.
- Amman, Jordan, 17th Nov 2011, gave a presentation about "Scholarships in Europe and especially in Germany" organized in cooperation between the "Jordanian Astronomical Society" and the "Jordanian Physics Society" at its third anniversary. Discussion also included opportunities at the USA and the world.
- Amman, Jordan, 4-8 Dec 2011, attended the 2nd Conf. for Amman City: "Sustainability and Participation" organized by Amman Municipality and Center for New Jordan Studies

- Irbid, Jordan, 13 Dec 2011, Participating at the Faculty of Archaeology and Anthropology of Yarmouk Univ in workshop about Archaeology of North Jordan plateau during the bronze and iron ages.
- Amman, Jordan, 26 April 2012, Conf at PSUT under the title "Jordanian Professors Today: Humboldtians Tomorrow", Society of Friends of Humboldt. Presentations and discussions about Humboldt cooperation's between Germany and Jordanian humboldtians: valuable experience.
Speakers were Prof. Dr.: Hani Khouri, Elias Salameh, Ziad al-Saad & Lamia Khoury, Bothina Hamad, Luay Rashan, Ahmad Mousa, Ahmad Ajlouni & Mohammad El-Khateeb, Yaseen Al-Soud and Ahmad Abu-El-Haija.
- Amman, Jordan, 14th Oct 2012, attending the 1st Arab Robotics Conference.
- Amman, Jordan, 8th Nov 2012, Giving a lecture for elementary students of Al Fareed Model Schools in Amman, titled "Industrial materials and its role in development".
- Mafraq, Jordan, 8th April 2015, attending the 14th Jordanian Chemistry Conf. at Al al-Bayt University.
- Irbid, Jordan, 27 - 29th April 2015, participating the Int. Conf. on advanced Materials (ICAM 2015) at JUST. My graduate students presented two papers at the Conf. that were refereed and published at the British Journal of the Institute of Physics, U.K.
- Petra, Jordan, 05 – 08 May 2015, attended the 15th Int. congress of the Int. Society for Ethnopharmacology.
- Amman, Jordan, May 2015 appointed on the Founding Committee of "King Abdullah II Center for Nano Technology".
- Madaba, Jordan, 18 – 22 Oct 2015, participated at the Winter Workshop 2015 on "Heavy Metal removal and water treatment" within collaboration project between GJU and Leibnitz Institute for analytical science – ISAS – e.V. and gave presentation about academic scholarships with Germany.
- Amman, Jordan, 21 – 23 Oct 2015, participated at the Int. Pharmaceutical Conf. 2015 on "Frontiers in the pharmaceutical Sciences and Pharmacy Practice: A global perspective" within collaboration project between Al-Zaytoonah Univ of Jordan and Univ. of Toledo under the title "Frontiers in the Pharmaceutical Sciences and Pharmacy Practice: A global perspective". I gave presentation about academic scholarships in cooperation with Germany.
- Amman, Jordan, organized the following joint educational and cultural events (JCHF and Friederich Naumann Foundation; FNF):
 - * "The role of intellectual freedom in cultural, technological and economic development Jordanian and German perspectives"; 24th March, 2013.
 - * "Supporting intellectual freedom-strategies for scientific and educational progress in Jordan"; 1st Dec 2013 at Le Royal Hotel.
 - * "Performance measures and accountability of Jordan's higher education system";
12th Oct 2014 at the Intercontinental Hotel.

* "Educational reforms in Jordan – What is still needed?";
30th Nov 2014 at the Landmark Hotel.

* "Young Syrian Refugees in Jordan's higher education systems: Challenges and policies";
16th April 2015 at the Intercontinental Hotel.

* "Reality and ambition of scientific research in the Jordanian academic institutions" 6th Oct 2015 at the Sheraton Hotel.

* "Reform in education system in Jordan; Workshop"; Discussion about reality of higher education and scientific research in Jordan; with the Director of Science Research Support Fund and academics from Higher Education Council & Universities.

9th Sept, 2015 at the Sheraton Hotel.

* A seminars were on Nov 24th, 2015 about "The effect of of Syrian refugees on the Higher Educational system (Universities) in Jordan".

* A conference was organized on April 13th, 2016 which presented the success story of higher education and industry in the field of Pharmacy and how to bridge the gap between them. HRH Princess Sumaya bint el Hassan patronized the Conf. giving a talk. Deans of Pharmacy faculties at several Arab Univ., Sec. General of the Arab Association of Pharmacy Faculties, Min. of Industry and several others from academia and industry actively participated. This Conf. to be followed by other conferences to work on bridging the gap.

* A conference was organized on Nov 24th, 2016 about "Integrated Solid Waste Management in Jordan" held at landmark Hotel under the patronage of HE Minister of Water.

- Amman, Jordan 13th Aug, 2015, participated at the meeting of Jordanian Scientists & Technologists Abroad – JoSTA Network

- Amman, Jordan, Oct 2015, member of the national committee (at Higher Council for Science and Tech.) to study establishing "National Nano Technology Center"

- Irbid, Jordan, 26 -28th April 2016, participated at the Spring Workshop "Nanotechnology in heavy metals removal and water treatment & Scientific Nanotechnology Day" helped initiated with collaboration between JUST & Leibniz Institute for Analytical Science – ISAS – e.V. / Dortmund Germany

- Amman, Jordan, 6-8 Dec, 2016, member of the preparatory committee of the 2nd Conference for "Arab Survey and Geonames Experts".

- Jordan, as a Science Humboldt Ambassador (2010 – 2015), I gave lectures at various Jordanian universities about the Humboldt Foundation and research in Germany mainly about postdoctoral scholarships. As a result, several scholarships and academic exchange programs for Jordanians and Germans were obtained in studying and researching.

- Mu'tah, Jordan, 2011 – 2019; supervised several graduate students carrying out advance scientific research for Masters degree.

Most of those students had the opportunity to travel to USA, Germany and Poland for training during the course of study. In addition, top experts in the field from

those countries spent time training them in Jordan.

They participated, among twelve MENA students, at "Young scientists training workshop" run by German and Jordanian scientists at UJ, Amman between 1-2nd April, 2014. Training enabled those students to fix some faulty advanced equipment at Mu'tah university.

- Mu'tah, Jordan, 4th April 2017, participated at the Science Day of Science Faculty, giving a talk titled "Electron microscopy-based performance evaluation of various tungsten field-emitter tips apex radii". Then participating on the panel at the open discussion followed titled "Scientific research at Science Faculty of Mu'tah University: Reality and Ambition"

-Al al-Bayt Univ., 5 – 6th April 2017, attended Conf. "Chemistry and Biosciences"

- Irbid, Jordan, 10 - 13th July 2017, participated at the Int. Conf. on advanced Materials (ICAM 2017). I presented invited talk titled "The influence of material composition on the development of electron sources". My graduate students presented three papers to be refereed for publication at the British Journal of the Institute of Physics, U.K. titled "Comparison between the Electron Emission Properties of Single-Walled Carbon Nanotube and Carbon Nano-Fiber Pyrograf III", " Field Electron Emission Characteristics of Single-Walled Carbon Nanotube on Tungsten Blunt Tip" and " Comparison Effect of Epoxylic resin on Electron Field Emission for Carbon Fiber and Tungsten Tip ".

- Amman, (Jordan) 12- 14th Sept., 2017, participated at the First Int. Conf. Geospatial Information Management "Mapping the Future". Being on the Conference organizing committee.

- Amman, Jordan 13th Oct., 2017, member of committee for refereeing the Price for Scientific & Technological Innovation & Creativity, SRSF.

- Amman, 2nd Nov., 2017, awarded Certificate of Appreciation from the Applied Science University.

- Amman (Jordan) 29 -30th Nov, 2017 participated at the 6th Int. Conf. (ZTIPC 2017: New Horizons in Pharmaceutical Research) held at al Zaytoonah Univ.

- Amman, Jordan since Sept 2017 till now at the JU: participated in organizing various activities about scholarships to germany, Physics Day of the Science Faculty and other seminars.

- Amman (Jordan) Aoun Cultural association; 14 03 2018 founding member and member of the Administrative Committee for 5 years.

- Amman (Jordan) 11 -12th May 2018: DAAD –AvH-Alumni Seminar in Amman titled "Meeting the challenges in the region – what can Int / regional academic co-operation contribute"

-Amman, Jordan 16 – 18 July 2018, The Int. Conf on fractional differentiation and its applications (ICFDA), held at the Univ. of Jordan, Amman.

- Amman (Jordan), 9 – 12th Oct. 2018: attended the 9th Petra school of Physics. I was on the organizing committee of the school. The school was held under the patronage of HRHG Prince Hasan Bin Talal.

-Amman (Jordan) 25th Oct, 2018 organized the joint Conf. between the JCHF and the FNF titled "Building successful partnerships between academia and industry –

scientific research and labor market needs"

-Amman, Jordan Conf., 26.11. 2018, UNDP & Prince Faisal Research Center for Dead Sea Environment and Energy "مشروع التقليل والحد من الملوثات العضوية الثابتة"

- Amman (Jordan) 25 – 28th March, 2019, participating at U.N./Jordan Workshop: Global partnership in space exploration and innovation. Co-chairing the session "Terrestrial Analogues"

- Amman (Jordan) 04th April 2019, at Haya Cultural Center, organized jointly with the JCHF and Al-Balqa' Applied University and FNF organized a day Conference titled "New horizons in technical and vocational training in Jordan".

- Amman (Jordan); 2nd June 2019 Letter of gratitude from the Minister of Higher Education and Scientific Research for running seminar about applications for funding from the Science Research Support and Innovation Fund (SRSF).

- Oct. 2019 Appointed on the Editorial Board of the Journal of Engineering (JE), Univ. of Bagdad. Previously has been on the Journal advisory board.

- Amman (Jordan) 10th Oct., 2019 at the JU, Attending the 16th Jordanian Chemistry Conf.

Funded Research projects

- A research project was supported by Deanship of Scientific research at Mu'tah Univ. I was the Main Researcher in this project which is almost finished with 4 publications in Int Journals are published from this project. "the title of the project is Field electron emission from MW CNTs as a potential electron source"

- Another joint Research project has been supported by the Science Research Support Fund (SRSF). The Main researcher is Dr. Inshad Yousef Jum'ah from the German Jordanian Univ., co-supervising my graduate student Mahmoud Mhawesh working on this project in addition to my student Ayman al Masri who spent the summer working on the Project in Dortmund, Germany titled: "Polymeric nanocomposites doped with magnetically aligned nanoparticles for monovalent and multivalent ion rejection and electromagnetic wave polarizer"

- A 3rd Research Project has been approved by the Deanship of Scientific Research in Mu'tah University. "The topic is about characterization of an electron source from SW CNT mounted on W bases".

Courses taught at Univ.s: (Mu'tah, Yarmouk, Al-al Bayt, GJU, JU & Florida Int.):

General Physics 1 (Mechanics and Heat)	3 credit hrs
General Physics 2 (Electricity and Magnetism)	=
General Physics for Agriculture	=
Electronics (also taught at JU)	=
Properties of Matter	=

Vacuum Technology	=
Electron Microscopy	=
Electronics for Computers	=
Electronic Instrumentation	=
Final year Graduation Project	=
Solid State Physics	=
Digital Electronics & Digital Electronics Lab.	=
Vibrations and Waves	=
Introduction to Light and waves	=
Thin Film Technology	=
Quantum Mechanics	=
Thermodynamics	=
Statistical Mechanics	=
Atomic Physics	=
Modern Physics	=
Electromagnetic Theory I	=
Electromagnetic Theory II	=
Surface Physics	=
Physics of Meteorology	=
Environmental Physics	= (also taught at the
Dept. of Physics, Al al-Bayt Univ., Jordan)	
Modern Communication Systems	=(taught at the Dept.
of Electrical & Computer Eng., Florida Int. Univ., USA)	
Physics for Architects	=
Physics for Life Sciences (JU)	=
General Physics Lab. (1)	1 credit hr
General Physics Lab. (2)	=
Electronics Lab.	=
Vacuum Technology Lab.	=
Electronic Instrumentation Lab.	=
Optics Lab.	=
Applied Physics Lab.	2 credit hrs
Advanced Physics lab.	2 credit hrs
Electrodynamics (M.Sc. students)	=
Methodologies of scientific research (M.Sc. students)	=
High Voltage Breakdown Phenomenon (M.Sc. students)	=
Non Destructive Technique (NDT) & its applications (M.Sc.)	=
Statistical Mechanics (JU, for M.Sc. students)	=
Plasma Physics (JU, for Ph.D. students)	=
Surface Physics (JU, for Ph.D. students)	=

Publications of Marwan S. Mousa
Professor of Physics
Dept. of Physics, Mu'tah University, P.O.Box (7), Al-Karak, Jordan.

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"Beam-energy distribution measurements of liquid gallium field-ion sources."
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2. Marwan .S. Mousa,
"A study of field electron emission from composite micro-regimes."
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3. R.V.Latham and M.S.Mousa,
"Hot electron emission from composite metal-insulator micro-point cathodes."
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5. M.S.Mousa,
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6. M.S.Mousa,
"Study of field induced hot-electron emission using the composite microemitters with varying dielectric layer thickness."
J. Phys. (Paris), 48, C6, 115 - 120, (1987).
7. M.S.Mousa,
"Characteristics of tungsten substrate with Al₂O₃ coatings under U.H.V. conditions."
Vacuum, 38, 835 - 838, (1988).
8. M.S.Mousa,
"Effect of lacomit films on cold-cathode hot-electron emission."
J. Phys. (Paris), 49, C6, 237 - 242, (1988).
9. S.Bajic, M.S.Mousa and R.V.Latham,
"Factors influencing the stability of cold-cathodes formed by coating a planar electrode with a metal-insulator composite."
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10. M.S.Mousa,
"Cold cathode field emission using both Al-resin and Au-resin coatings on tungsten substrate."
Surface Science, 231, 142 - 148, (1990).

11. M.S.Mousa,
"A new perspective on the hot electron emission from metal-insulator microstructures."
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"Effect of an internally conductive coating on the electron emission from glass tips."
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13. M.S.Mousa,
"Field electron emission studies on zinc oxide coated tungsten micro-emitters."
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14. R.Madenach, G.Abend, M.S.Mousa, H.J.Kreuzer and J.H.Block,
"Influence of electrostatic fields on binding energy (NO on Rh)."
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"Field emission of electrons from glass tips with internal conducting coats."
J. Phys. D : Appl. Phys., 26, 697-703 (1993).
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"Analysis of some properties of metal-glass microemitters subjected to strong electric fields."
Applied Surface Science, 67, 59-65 (1993).
17. M.S.Mousa, P.R.Schwoebel, I.Brodie and C.A.Spindt,
"Observations of work function changes in field-emitter arrays."
Applied Surface Science, 67, 56-58 (1993).
18. M.S.Mousa, C.E.Holland, I.Brodie and C.A.Spindt,
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"'Switch-on' phenomena in field electron and field ion microscopy."
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"Observations of a field forming process for ZnO-W cold cathodes."
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"Cold-cathode emission from Cu-broad area electrodes overlaid by resin-ZnO composite."
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29. M.S.Mousa,
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