Name: **Mohamad Mahmoud Ahmad Mohamad**

Permanent Position: Associate Professor of Physics, Assiut University, Egypt.

Current Position: Associate Professor, Department of Physics, College of Science, King Faisal University, Saudi Arabia

Date and Place of Birth: 27 March, 1972, Assiut, Egypt

Current Address:

Department of Physics, College of Science, King Faisal University, Al-Ahsaa, Saudi Arabia

Contact Information:

Tel. : 0562399692

E-mail Address: mmohamad@kfu.edu.sa , mmahmad@aun.edu.eg , mma7@yahoo.com

Educational Background

1- Ph.D (Experimental Solid State Physics), Department of Physics, Faculty of Science, Assiut University/Hiroshima University, February 2004.

Dissertation Title: "Ion Dynamics and relaxation in Fluoride Ion Conductors $PbSnF_4$, KSn_2F_5, and $RbSn_2F_5$ Studied by NMR and Impedance Spectroscopy"

2- M.Sc. Degree, Physics, Department of Physics, Faculty of Science, Assiut University, Egypt, September 1999.

Thesis Title: "Spectroscopic Studies and Electrical Conductivity Behavior of γ-Irradiated Li_2SO_4-K_2SO_4, Li_2SO_4-Na_2SO_4 and K_2SO_4-Na_2SO_4 Mixed Systems "

3- Bc.S. Degree in Physics, Department of Physics, Faculty of Science, Assiut University, Egypt, June 1994.

Research Interests

Topics:

1- Ionic conduction and relaxation dynamics in ionic conducting materials.

2- Dielectric properties and dielectric relaxation phenomena in solid materials.

3- Nanoceramic oxide materials with giant dielectric properties.

4- Mechanochemical synthesis of nanocrystalline materials.

5- Spark plasma sintering of nanocrystalline materials.

Techniques:

Impedance spectroscopy over wide ranges of frequencies and temperatures, mechanochemical milling, spark plasma sintering.

Careers

1995-1999: Instructor of Physics, Faculty of Education in The New Valley, Assiut University, Egypt.

1999-2004: Assistant Lecturer, Faculty of Education in The New Valley, Assiut University, Egypt.

2001-2003: Guest Researcher, Graduate School of Science, Hiroshima University, Japan.

2004-2009: Assistant Professor of Physics, Faculty of Education in The New Valley, Assiut University, Egypt.

2006-2008: JSPS postdoctoral Fellow, Nihon University, Japan.

2008-2009: Contract Researcher, Condensed Molecular Materials Group, RIKEN, Japan.

2009 to date: Associate Professor of Physics, Faculty of Education in The New Valley, Assiut University, Egypt.

2009 to date: Associate Professor of Physics, College of Science, King Faisal University, Saudi Arabia.

Awards

1- The Egypt State Award of Physical Sciences 2007. Awarded by the Academy of Scientific Research and Technology, Egypt.

(جائزة الدولة التشجيعية في العلوم الفيزيائية من أكاديمية الدولة للبحث العلمي والتكنولوجيا، مصر 2007م)

2- JSPS postdoctoral fellowship 2006-2008 at Nihon University, Japan. Awarded by the Japan Society for the Promotion of Science.

3- Guest Researcher 2001-2003 at Hiroshima University, Japan. A scholarship awarded by the Ministry of Higher Education, Egypt.

Membership at Scientific Societies:

1- The Physical Society of Japan

2- The Chemical Society of Japan

Other Scientific Activities:

Reviewer for the following international journals:

Journal of Physical Chemistry C, Journal of Applied Physics, Solid State Ionics, Solid State Sciences, Materials Chemistry and Physics, Journal of Materials Science: Materials in Electronics, Physica B, Ionics.

List of Publications

(a) Book Chapters:

1- **Mohamad M Ahmad**, "Conductivity and dielectric relaxations in ionically conducting crystals", in '***Focus on Condensed Matter Physics Research***', edited by John V. Chang (Nova Science Publishers, Inc., New York), Chapter 3, (2005).

(b) Journal Papers:

27- **M.M. Ahmad***, Y. Yamane, and K. Yamada

"Structure, ionic conduction, and giant dielectric properties of mechanochemically synthesized $BaSnF_4$", **Journal of Applied Physics**, Vol. **106**, 074106 (2009).

26- **M.M. Ahmad*** and K. Yamada

"Hopping rates and concentration of mobile fluoride ions in $Pb_{1-x}Sn_xF_2$ solid solutions", **The Journal of Chemical Physical**, Vol. **127**, 124507, September (2007).

25- **M.M. Ahmad***, Y. Yamane, K. Yamada and S. Tanaka

"Dielectric relaxation properties of $Pb_{1-x}Sn_xF_2$ solid solutions prepared by mechanochemical milling", **Journal of Physics D: Applied Physics**, Vol. **40**, 6020-6025 (2007).

24- **M.M. Ahmad*** and K. Yamada

"Superionic $PbSnF_4$: A giant dielectric constant material", **Applied Physics Letters**, Vol. **91**, 052912, July (2007).

23- M.A. Gaffar*, **M.M. Ahmad**, K. Yamada and T. Okuda

"The double-peak phenomenon of the phase transition of Rb substituting K in $LiKSO_4$, competition between Rb sub-lattice and smearing the phase transition", **Journal of Physics D: Applied Physics**, Vol. **40**, No. 14, pp. 4360-4367, July (2007).

22- **M.M. Ahmad***, K. Yamada, P. Meuffels and R. Waser

"Aging-induced dielectric relaxation in barium titanate ceramics", **Applied Physics Letters**, Vol. **90**, 112902, March (2007).

21- **M.M. Ahmad***, M.A. Gaffar, K. Yamada and T. Okuda

"Ion dynamics and structure-dependent conductivity scaling properties in polycrystalline $LiK_{1-x}Rb_xSO_4$", **Journal of Physics and Chemistry of Solids**, Vol. **68**, issue 3, pp. 470-476, March (2007).

20- J.R. Macdonald* and **M.M. Ahmad**

"Slopes, nearly constant loss, universality, and hopping rates for dispersive ionic conduction", **Journal of Physics: Condensed Matter**, Vol. **19**, No. 4, 046215, January (2007).

19- **M.M. Ahmad***, S.A. Makhlouf and K.M.S. Khalil

"Dielectric behavior and ac conductivity of NiO/Al_2O_3 nanocomposites in humid atmosphere", **Journal of Applied Physics**, Vol. **100**, Issue 9, 094323, November (2006).

18- **Mohamad M Ahmad***

"Ionic conduction and dielectric relaxation in polycrystalline Na_2SO_4", **Solid State Ionics**, Vol. **177**, pp. 21-28, January (2006).

17- **M.M. Ahmad***, E. Yousef and E. Mostfa

"Dielectric properties of the ternary TeO_2-Nb_2O_5-ZnO glasses", **Physica B**, Vol. **371**, issue 1, pp. 74-80, January (2006).

16- **Mohamad M Ahmad***

"Estimation of the charge-carrier concentration and ac-conductivity scaling properties near the V-I phase transition of polycrystalline Na_2SO_4", **Physical Review B**, Vol. **72**, 174303, November (2005).

15- **Mohamad M Ahmad***

(**Invited paper**) "Ionic conduction and relaxation in some superionic fluoride ion conductors", in "*Defects and Diffusion in Halides and Ice – A 7-Year Retrospective*", edited by David J. Fisher (Trans Tech Publications Inc., Switzerland), pp. 1-27, September, (2004).

14- K. Yamada, **M.M. Ahmad***, Y. Ogiso, T. Okuda, J. Chikami, G. Miehe, H. Ehrenberg and H. Fuess

"Two dimensional fluoride ion conductor $RbSn_2F_5$ studied by impedance spectroscopy and ^{19}F, ^{119}Sn and ^{87}Rb NMR", **The European Physical Journal B**, Vol. **40**, No. 2, pp. 167-176, July, (2004).

13- **M.M. Ahmad***, K. Yamada and T. Okuda

"Conductivity spectra and comparative scaling studies of polycrystalline $PbSnF_4$", **Solid State Ionics**, Vol. **167**, issues 3-4, pp. 285-292, February, (2004).

12- K. Yamada*, **M.M. Ahmad**, H. Ohki, T. Okuda, H. Ehrenberg and H. Fuess

"Structural phase transition of the two-dimensional fluoride ion conductor KSn_2F_5 studied by X-ray diffraction", **Solid State Ionics**, Vol. **167**, issues 3-4, pp. 301-307, February, (2004).

11- **M.M. Ahmad***, K. Yamada and T. Okuda

"Ionic conduction and relaxation in KSn_2F_5 fluoride ion conductor", **Physica B**, Vol. **339**, issues 2-3, pp. 94-100, December, (2003).

10- **M.M. Ahmad***, M.A. Hefni, A.H. Moharram, G.M. Shurit, K. Yamada and T. Okuda, "Fluoride ion dynamics and relaxation in KSn_2F_5 studied by ^{19}F NMR and impedance spectroscopy", **Journal of Physics: Condensed Matter**, Vol. **15**, No. 31, pp. 5341-5352, August, (2003).

9- **M.M. Ahmad**, K. Yamada and T. Okuda

"Fluoride ion diffusion of superionic $PbSnF_4$ studied by NMR and impedance spectroscopy", **Journal of Physics: Condensed Matter**, Vol. **14**, No. 30, pp. 7233-7244, August, (2002).

8- **M.M. Ahmad*,** K. Yamada and T. Okuda

"Frequency dependent conductivity and dielectric studies on $RbSn_2F_5$", **Solid State Communications**, Vol. **123**, issue 5, pp. 185-189, August, (2002).

7- **M.M. Ahmad*** and M.A. Hefni

"Effect of Li content on the DSC and electrical conductivity of $(Li_{1-x}K_x)_2SO_4$ mixed crystals", **Zeitschrift fur Naturforschung A**, Vol. **56**, No. 9/10, pp. 677-680, (2001).

6- M.A. Osman, M.A. Hefni*, R.M. Mahfouz and **M.M. Ahmad**

"γ-irradiation effect on the electrical properties of $LiKSO_4$", **Physica B**, Vol. **301**, issues 3-4, pp. 318-325, August, (2001).

5- **M.M. Ahmad*** and M.A. Hefni

"DSC and electrical conductivity studies of $(Li_{1-x}K_x)_2SO_4$ mixed crystals", **Radiation Effects and Defects in Solids**, Vol. **153**, No.4, pp. 359-366, (2001).

4- M.A. Hefni*, M.A. Osman, R.M. Mahfouz and **M.M. Ahmad**

"γ-irradiation effect on the spectroscopic and electrical properties of K_2SO_4-Na_2SO_4 mixed system", **Radiation Effects and Defects in Solids**, Vol. **153**, pp. 151-171, (2001).

3- M.A. Osman, M.A. Hefni, R.M. Mahfouz and **M.M. Ahmad***

"Spectroscopic studies and electrical conductivity behavior of γ-irradiated Li_2SO_4-Na_2SO_4 mixed system", **Radiation Effects and Defects in Solids**, Vol. **153**, pp. 115-138, (2001).

2- M.A. Hefni, M.A. Osman, R.M. Mahfouz and **M.M. Ahmad***

"Electron paramagnetic resonance, infrared, and electrical conductivity studies of γ-ray irradiated Li_2SO_4- K_2SO_4 mixed system", **Radiation Effects and Defects in Solids**, Vol. **152**, pp. 255-267, (2000).

1- M.A. Hefni, M.A. Osman, R.M. Mahfouz and **M.M. Ahmad**

"Electron paramagnetic resonance studies of γ-ray irradiated Li_2SO_4- K_2SO_4 mixed crystals", **Arab Journal of Nuclear Sciences and Applications**, Vol. **32**, pp. 190-196, (1999).

(* : **Corresponding Author**)

Presentations in International and National Meetings

1- **M.M. Ahmad***, N. Tajima and R. Kato

"Dielectric properties of organic conductor α-$(BEDT\text{-}TTF)_2I_3$"

The 64th annual meeting of the Physical Society of Japan, March 2009.

2- **M.M. Ahmad*** and K. Yamada

"Ion dynamics and giant dielectric constant in $Pb_{1-x}Sn_xF_2$ solid solutions"

The 1st Egypt – Japan International Symposium on Science and Technology, 8 – 10 June 2008, Waseda University, Tokyo, Japan.

3- **M.M. Ahmad*** and K. Yamada

"Ionic conduction and relaxation properties in mechanochemically synthesized $BaSnF_4$"

The 2nd International Conference on Physics of Solid State Ionics, 16 – 19 December 2007, Tokyo Institute of Technology, Yokohama, Japan.

4- **M.M. Ahmad*** and K. Yamada

"Ion dynamics and giant dielectric properties in nanocrystalline $Pb_{1-x}Sn_xF_2$ solid solutions"

The 1st International Conference on Materials Science & Technology (Future Challenges), 2 – 4 December 2007, National Research Center, Cairo, Egypt.

5- **M.M. Ahmad***, Y. Yamane and K. Yamada

" Ionic conduction and relaxation phenomena in solid solutions between lead fluoride and tin fluoride "

The 87th Spring Meeting of the Chemical Society of Japan, 25 – 28 March 2007, Kansai University, Osaka, Japan.

6- K. Yamada*, H. Suzuki, **M.M. Ahmad** and Y. Yamane

" Lithium ion conductivity of halide spinel "

The 87th Spring Meeting of the Chemical Society of Japan, 25 – 28 March 2007, Kansai University, Osaka, Japan.

7- K. Yamada*, H. Suzuki, **M.M. Ahmad** and Y. Yamane

" Lithium ion conductivity for spinel halides "

The 32nd Symposium on Solid State Ionics, 27 – 29 Nov. 2006, Kyushu University, Kyushu, Japan.

***: (Presenter)**