FACULTY RESEARCH PROFILE

NAME	:	**Dr. KHATTAK, G.K.**
RANK	:	Professor
DEGREE/YEAR/ INSTITUTION	:	Ph. D./ 1978/ Purdue University (U.S.A.)
FIELD	:	Condensed Matter Physics (Experimental)
CONCENTRATION	:	Solid State Physics - Specific Heat, Magnetization, XPS, Optical & Electrical Properties of Materials, Superconductivity, Low Temperatures.

Research Activities:

My research concentration is in the investigation of specific heat, XPS (X-ray photoelectron spectroscopy), magnetization, optical and electrical properties of materials of different systems. Main areas of my research interest are:

- High Tc Superconducting Ceramics
- Semiconducting glasses
- Semimagnetic Semiconductors
- Oxides (Titanium, Vanadium etc.)
- Magneli Phases
- Inorganic Complexes

See list of Research Publications, attached.

I have experience in designing ^{3}He cryostats which can be used for carrying out investigations at low temperatures (0.3 - 100 K). Also in my previous work I have developed a specific heat system for measuring the specific heat of very small samples (discussed in papers no. 2 and no. 4 in detail).

At KFUPM Dr. Keith and myself have developed an Ultra-Low Temperature Lab where we have installed a dilution refrigerator (SHE Corp. Model DRI-420) capable of achieving millikelvin temperatures. The millikelvin facility is used for carrying out investigations at ultra-low temperatures.

Also for investigating high temperature superconductors Dr. Keith and myself have designed and fabricated resistance measuring set-up using the facilities of our Physics Department workshop.

In brief, I have experience in the operation and maintenance of:

i) ^{3}He refrigerator (cryostat)

ii) Dilution Refrigerator (using ^{3}He ^{4}He mixture)

iii) Sample Vibrating Magnetometer

iv) Squid Magnetometer

v) Low Temperature devices in general

vi) Spectrophotometer (Varian Model DMS-90).

Bio Data of: Dr. Gul Dad Khan Khattak

Present Address

Professor of Physics
Department of Physics
King Fahd University of Petroleum
& Minerals
KFUPM Post Box 1854
Dhahran 31261, Saudi Arabia

Permanent Address

House No. 344,
Street No. 14,
Sector : F-10/2,
Islamabad.
Ph: (51)2105149

Ph. : (Res) 996-03- 860-5248 (Work) 966-03- 860-2260
Telex : 801060 KFUPM SJ
Fax : 966-03-860-2293
Email: gkhattak@kfupm.edu.sa

Education:

1974-1978 : **Purdue University**, W. Lafayette, Indiana 47907, USA.

Ph.D. (1978) and M.S. (1975) in Physics.

Specialization: Experimental Solid State Physics.

Ph.D. Thesis: Low Temperature Specific Heat of Niobium-Doped Rutile (TiO_2), The Vanadium Magneli Phases V_nO_{2n-1}, and of Graphite

1969-1971 : Peshawar University, Peshawar, Pakistan.

M.Sc (General Physics) : 1971
B.Sc (Physics & Math) : 1969

Laboratory Techniques:

(i) Ultra high vacuum technology.

(ii) ^{3}He refrigerator .

(iii) Dilution refrigerator ((using ^{3}He-^{4}He mixture).

(iv) Low temperature devices in general.

During my Ph.D research work, I have developed a specific heat system for measuring the specific heat of very small samples.

Employment:

Teaching and Research Positions:

Year	Position
1993-todate	Professor of Physics, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia.
1986-1993	Associate Professor of Physics, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia.
Dec 1980 - Jan 1986	Assistant Professor of Physics, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia.
Dec 1979 - Dec 1980	Senior Research Associate, Purdue University (USA).
Sept 1978 - Dec 1979	Assistant Professor of Physics, Peshawar University, Peshawar, Pakistan (on leave Dec. 1979-Dec. 1981)
Jan 1974 - Jun 1978	Teaching and Research Assistant, Department of Physics, Purdue University, W. Lafayette IN 47907, USA.
1971-1973	Lecturer, Department of Physics, University of Peshawar, Pakistan.

Distinctions and Honours:

- Obtained 1st division and 2nd position in the University in B.Sc.
- Merit Scholarship holder for my entire education (High School, F.Sc., B.Sc., M.Sc.)
- Recipient of **GOLD MEDAL** in 1971 from Peshawar University.
- First Position in M.Sc. Physics Class of 1971.
- Awarded the title “Distinguished Teacher” in the Physics Department King Fahd University of Petroleum & Minerals for the year 1987-1988.
- Awarded the title “Distinguished Teacher” in the Physics Department King Fahd University of Petroleum & Minerals for the year 1991-92.

Academic and Administrative Experience:

- Coordinator of the Physics Department's Condensed Matter Research Group (1985-1987).

- Chairman or member of several Physics Department adhoc and standing committees dealing with curricula (undergraduate and graduate) and graduate research in physics department.

- Chairman/Member of several promotion committees of the University.

- Have been referee for reviewing papers for several reputable journals (Physical Review B, J. Non-Crystalline Solids, J. Electron Spectroscopy and Related phenomena, etc.)

Research

1. Areas of Research Interest:

- High T_C Superconducting Ceramics
- Semiconducting glasses
- Semimagnetic Semiconductors - Oxides (Titanium, Vanadium etc.)
- Magneli Phases
- Inorganic Complexes
- Thin films

See attached list of research Publications.

Research concentration is in the investigation of specific heat, magnetization, XPS, Spectral, optical and electrical properties of materials of different systems (see the list of my publications).

2. Development

- Developed an Ultra-Low Temperature Lab where we have installed a dilution refrigerator (SHE Corp. Model DRI-420) capable of achieving millikelvin temperatures. The millikelvin facility is used for carrying out investigations at ultra-low temperatures.

- Also for investigating high-temperature superconductors I have designed and fabricated resistance measuring set-up using the facilities of our Physics department workshop.

- Developed a ^{4}He Cryostat for carrying out investigations between 4.2 - 100 K.

- Developed a specific heat system for measuring the specific heat of very small samples.

3. Research Proposals

1) "Specific Heat and magnetic susceptibility Investigations of Semimagnetic Semiconductors" which was approved for funding by the KFUPM research committee. (Code # PHY/PHYSPROP/43) and has been completed. (Please see RESEARCH ABSTRACTS, KFUPM, page 87, April 1990).

2) X-ray Photoelectron Spectroscopy (XPS) and Magnetization Studies of Strontium-Borate Vanadate Glasses(Approved Project # FT/2002-05), **COMPLETED**

3) X-ray photoelectron spectroscopy (XPS) and magnetization studies of TM-Tellurite Glasses **APPROVED (SABIC -024) , June 01, 2004 – June 01, 2005. COMPLETED**

4) "Direct Current (DC) Conductivity Studies of Strontium-Borate-Vanadate Glasses" Approved and in Progress.

In addition to the formally approved projects, I have carried out research on several projects through the support of the department as evident from my PUBLICATIONS.

4. Collaborative Research Projects

I have been active in collaborative research both with Scientists abroad as well as within KFUPM.

Abroad:

- Prof. R.R. Galazka, Institute of Physics, Polish Academy of Sciences and Technology, A1- Latnikow 32/46, 02 - 668 /Warszava, Poland.

- Prof. P.H. Keesom, Physics Department, Purdue University, W. Lafayette, Indiana 47907, U.S.A. (1980-90).

- Prof. L.E. Wenger, Physics Department, Wayne State University, Detroit, MI 48202, U.S.A.

Within KFUPM

- Dr. M.S. Hussain, Prof. of Chemistry, KFUPM (No more at KFUPM).
- Dr. V. Keith, Associate Prof. ofPhysics,KFUPM(No more at KFUPM).
- Dr. E.E. Khawaja, Senior Research Scientist, ERL(No more at KFUPM).
- Dr. M.A.Salim , Associate Prof. of Physics, KFUPM(No more at KFUPM)

- Dr. N. Tabet, Associate Prof. of Physics, KFUPM
- Dr. A. Mekki, Assistant Prof. of Physics, KFUPM
- Dr. M.A. Gondal, Professor of Physics, KFUPM (Will start within weeks)

This collaborative work and the systems investigated are shown in the list of publications.

5. Instrumentation:

Operation and Maintenance of:

(i) Ultra high vacuum technology
(ii) ^{3}He refrigerator (cryostat)
(iii) Dilution Refrigerator (using ^{3}He-^{4}He mixture).
(iv) Sample Vibrating Magnetometer
(v) Squid Magnetometer
(vi) Low Temperature devices in general
vii) Spectrophotometer (Varian Model DMS-90).

6. Supervision of Theses as Thesis Committee Member:

1. M.S. Kariapper, KFUPM Physics Department, Magnetization and Electron Spin Resonance Studies of HO (GdxCe1-x) Rh2 Compounds", June 1989.

2. Mansour Al-Shafei , KFUPM Chemistry Department, "Effect of Compositional Variations on the Superconductivity of La-(Ba-Sr-Ca)-CuO and Y-(Ba-Sr-Ca)-CuO Ceramic Systems" June 1990.

3. Maher Abdelhadi, KFUPM Physics Department, "Critical Currents And Pinning Forces in Y $Ba_2 Cu_3 O_7$ high T_C Superconductors

7. Supervision of Senior Research Projects:

I have supervised several Senior Research Projects as a part of PHYS 403 (Senior Lab) and PHYS 503 (Graduate Lab) courses. The titles of the projects and the students names are given below:

1. Omar Doghan, KFUPM Physics Department, "Measurement of the Transition Temperatures of La-(Ba-Sr)-Cu-O Ceramic Superconductors using Resistance Measurement Techniques" (Fall 1987-1988).

2. M.A. Redwan, KFUPM Physics Department, "Investigation of the Transition Temperatures of High Tc Superconductors of (Y, La)-Ba-Sr)-Cu-O Ceramic Systems using both magnetic and Resistance Measurement Techniques" (Spring 1987-1988).

3. S. Ruwaili, KFUPM Physics Department, "Effect of compositional variations by replacing Sr with Ba, Ca, and both on the transition temp. of High TC Superconductors of Y-Sr-CuO Systems" (Spring 1989-90).

Teaching:

July 1978 - Dec. 1979: Peshawar University, N.W.F.P. Pakistan

Taught the following **graduate level courses**:

i.	Quantum Mechanics	(FALL 1978)
ii.	Thermodynamics	(FALL 1978)
iii.	Solid State Physics	(SPRING 1979, FALL 1979)
iv.	Classical Mechanics	(SPRING 1979, FALL 1979

Dec. 1979 - Dec. 1980 : Purdue University, U.S.A.

Although I was designated as Research Associate, I taught physics courses at the level of PHYS 101 & PHYS 102 being taught at KFUPM.

Dec. 1980 - Present : PHYSICS DEPT. KFUPM

During my stay at KFUPM, I have taught **practically all courses in Physics** (i.e. PHYS. 101, 102, 201, 301, 302, 305, 306, 331, 401, 432, 507 .....) for the last 26 years. Also I have been coordinator for PHYS 101 & 102 courses (Lecture & Lab both) several times (more than 8 times for each course). I have participated in developing/improving several courses (Phys 301 & 302, Phys 101 & 102 etc.).

Lab Manual:

During my coordination I revised and re-wrote much of the PHYS 102 Lab Manual previously written by Dr. R.F. Lynch, Physics Department, KFUPM. Later on it was somewhat modified by Dr. S. El-Kateb. In its final form (copy attached) this Lab Manual is the result of a cooperative effort by the three coordinators (Drs. El-Kateb,

Khattak, and Lynch) over the past several years, and is currently in use in the teaching of PHYS 102 Lab. Again has been modified by PHYS Teaching Lab committee.

Short Courses/Workshops

1. Lectured in a Short Course on **" Surface Physics Techniques & Industrial Problems in Catalysis and Corrosion"**, Fall 1997, Organized by Department of Physics, KFUPM.
2. Gave a Talk " Use of computer in teaching PHYS 305 & 306" in a Workshop on **" Using Computer in Teaching Physics",** Organized by Physics Department, KFUPM, Fall 1998-1999.
3. Participated in a Workshop on **" Striving For Excellence in University Teaching And Learning"**, August 27-29, 2001, Organized by Academic Development Center, KFUPM.
4. Gave a Talk **" XPS And Magnetic studies of TM Oxide Glasses"** in a Workshop Organized by Physics Department, King Qaboos University, Mascut, Oman March 19-22, 2002.
5. Participated in a Workshop on **"Striving For Excellence in University Teaching And Learning"**, April 07-16, 2002, Organized by Academic Development Center, KFUPM.
6. Participated in a Discussion Forum on **" Enhancing Students Learning at KFUPM"**, March 26, 2002, Organized by Academic Development Center, KFUPM
7. Participated in several DAD's Activities (e.g., Discussion Forum on Faculty & Student Motivation, May 23, 2004 &A Workshop on Faculty Development Plan June 02, 2004)

8. A Workshop on Outcome – Based Program Assessment (Sept. 28, 2004)

9. Presented " Criteia & policy followed in assigning letter grades in general physics courses" April 15, 2005

10. Workshop on "Using Course Design to Create more Significant Learning Experience for Students" Sept. 03 – 04, 2006.

11. Attended Workshop on " Identifying Student Misconceptions in Engineering and Science" Organized by DAD, Feb.21, 2007

12. Attended Work Shop on "Building your Academic Portfolio" February 26 & 28, 2007.

List of Research Publications

Research Publications

A. Published in Refereed Journals

- **Publications before joining KFUPM**

1. L.E. Wenger, **G.D. Khattak**, and P.H. Keesom, "Calorimetric, resistance and susceptibility investigations of $(V_{1-x}\ Ti_x)_2\ O_3$ at low temperature", Bull. of American Phys. Soc., paper A13, April 1977 .

2. **G.D. Khattak** and P.H. Keesom, "Low temperature specific heat of niobium doped TiO_2", Phys. Rev. B17, 2192, 1978.

3. **G.D. Khattak**, P.H. Keesom, and S.P. Faile, "Specific heat of V_6O_{11} between 0.3 and 44 K", Solid State Comm. 26, 441, 1978.

4. **G.D. Khattak**, and P.H. Keesom, "Magnetic field dependence of the specific heat and resistivity of graphite", Phys. Rev B18, 6178, 1978.

5. **G.D. Khattak**, P.H. Keesom, and S.P. Faile, "Specific heat of the magneli phases $(V_n\ 02_{n-1}$, n=3-8)", Phys. Rev. B18 6181, 1978.

6. S. Nagata, B.F. Griffing, **G.D. Khattak**, and P.H. Keesom, "Susceptibility and specific heat of insulating magneli phases V_nO_{2n-1}", J. Appl. Phys Vol. 50, 7575, 1979.

- **Publications after joining KFUPM**

7. S. Nagata, R.R. Galazka, D.P. Mullin, H. Akbarzadeh, **G.D. Khattak**, J.K. Furdyna, and P.H. Keesom, "Magnetic susceptibility, specific heat, and the spin-glass transition in Hg_{1-x} Mn_xTe", Phys. Rev. B22, 331, 1980.

8. **G.D. Khattak**, C.K. Chandra, S. Nagata and P.H. Keesom, "Specific heat, and the spin-glass transition in Hg_{1-x}Mnx Se", Phys. Rev. 23B, 3553, 1981.

9. **G.D. Khattak**, H. Akbarzadeh, and P.H. Keesom, "Low temperature study of specific heat of mercury calcogenides and HgI_2, Phys, Rev. B23, 2911, 1981.

10. S. Nagata, R.R. Galazka, **G.D. Khattak**, C.D. Amarasekara, J.K. Furdyna and P.H. Keesom, "Spin glass transition in a diluted frustrated lattice: Cd_{1-x} Mn_x Te, Hg_{1-x} Mn_x Te and Hg_{1-x} Mn_xSe" Physica 107B+C, 311, 1981.

11. C.D. Amarasekara, **G.D. Khattak**, and P.H.Keesom, "Specific heat of sodium vanadium bronzes $NA_xV_2O_5$ between 0.3 and 50K", Phys. Rev. B27, 978, 1983.

12. **G.D. Khattak**, "Specific heat of uranium dioxide between 0.3 and 50k", Phys. Status Solidi (a) 75, 317, 1983.

13. **G.D. Khattak**, M.S. Hussain, G.W. Hunter, and L.E. Wenger, "Specific heat and magnetic susceptibility studies on bromobis (1,4-Diazacycloheptane) Copper (II) Perchlorate, $(Cu(dach)_2Br)$ $(C10_4)$, at Low Temperature", Phys. Stat. Sol. (b) 130, 587, 1985.

14. **G .D. Khattak**, A. Twardowksi, and R.R. Galazka, "Magnetization of $Cd_{1-x}Mn_xTe$", Phys. Stat. Sol. (a) 87, K57, 1985.

15. L.E. Wenger, G.W. Hunter, J.A. Mydosh, and **G.D. Khattak**, "Anisotropic magnetic field effects in a dilute YGd alloy", J. Mag. & Magnetic Materials, 54-57, 201, 1986.

16. M.S. Hussain, J. Ahmed, M. Haque and **G.D. Khattak**, "The crystal structure and low temperature magnetic susceptibility of square-planner Bis (1, 4 Diazacycloheptane) Nickel (II) Perchlorate Dihydrate", J. of Transition Metal Chem., 11. 155, 1986.

17. E.E. Khawaja and **G.D. Khattak**, "The optical absorption edge in vanadate glasses", Phys. Stat Sol (a) 93, 621, 1986.

18. M.S. Hussain, E.E. Khawaja and **G.D. Khattak**, "The optical and infrared studies of sodium-ditellurate glasses containing chromium oxide", Phys Stat Sol (a), 97, 451, 1986.

19. **G.D. Khattak** and M.S. Hussain, "Low temperature magnetization studies of nickel (II) complexes of 1, 4-diazacycloheptane", Journal of Magnetism and Magnetic Materials, 69, 263, 1987.

20. **G.D. Khattak**, M.S. Hussain, P.H. Keesom and L.E. Wenger, "Low temperature calorimetric and magnetic studies of copper (II) in 1, 4-diazacycloheptane-copper (II) systeme", J. Mag. and Magnetic Materials, 75, 407, 1988.

21. **G.D. Khattak**, V. Keith and Ph. Martin, "Magnetization of semimagnetic semiconductors ", Phys Stat. Sol. (a) 114, 71, 1989.

22. **G.D. Khattak**, M.S. Hussain and V. Keith, "Low temperature specific heat of $(Cu(dach)_2\ Cl_2$", J.Mag. and Magnetic Materials, 82, 1989.

23. E.E. Khawaja, M. Salim, M.A. Khan, F.F. Al-Adel, **G.D. Khattak** and Z. Hussain, "Effect of Ni doping on vanadium phosphate glasses", J. Non-Crystalline Solids 110, 33, 1989.

24. Z. Hussain, E.E. Khawaja, M.A. Salim and **G.D. Khattak**, "X-ray photoelectron spectroscopy investigation of sodium-ditellurate glasses", AJSE, 15, 337, 1990.

25. **G.D. Khattak**, V. Keith, Ph. Martin and E.E. Khawaja , "Magnetization Studies of ni doped vanadium-phosphate glasses", J. Mag. and Magnetic Materials, 94, 1991.

26. L. Henry, L.E. Wenger, **G.D. Khattak** and A. Tari, "A calorimetric study of the magnetic order in $^{H}0(Co_{1-x}Rh_x)_2$", Phys. Rev.B 43, 689, 1991.

27. **G.D. Khattak**, V. Keith and Ph. Martin, "Magnetization of semimagnetic semiconductor $Zn_{1-x}Mn_xTe$", Phys. Stat. Sol. (a) 130, 169, 1992.

28. M.S. Hussain, **G.D. Khattak** and V. Keith, "Superconducting ceramcis, noval preparation, XRD and SEM studies of the effect of compositional variations on superconductivity of La-(Ba-Sr-Ca)-Cu-O ceramics", J. Materials Science, 28, 2887, 1993.

29. **G.D. Khattak**, M.S. Hussain, "Low-temperature magnetization and spectral studies of cobalt complexes of alpha-furilglyoxine", J. Mag. & Magnetic Materials 134, 137, 1994.

30. M.A. Salim, **G.D. Khattak**, M. Sakhawat Hussain and E.E. Khawaja, "X-ray photoelectron spectroscopy, fourier transform infrared spectroscopy and electrical conductivity studies of copper - phosphate glasses", J. Non-Crystalline Solids 185, 101, 1995.

31. **G.D.Khattak**, L.E. Wenger, M.A. Salim, and E.E. Khawaja, "Study of valency states of copper in copper-phosphate glasses", J. Materials Science 30, 4032, 1995.

32. **G.D. Khattak**, E.E. Khawaja, L.E. Wenger, M.A. Salim, and A.B. Hallak, "Composition dependent loss of phosphorus in the formation of transition-metal phosphate glasses", J. Non-Crystalline Solids 194, 1, 1996.

33. **G.D. Khattak**, A.S. Al-Harthi, M.A. Salim, "Magnetization, RBS, and XPS studies of manganese-phosphate glasses", AJSE, 22, 57, 1997.

34. E.E. Khawaja, S.M. Durrani, J. Shirokoff, **G.D. Khattak**, M.A. Salim, M.S. Hussain, "Study of e-beam evaporated sn-doped indium oxide films", in Solar Energy Materials and Solar Cells, 44, 37, 1996.

35. **G.D. Khattak**, M.A. Salim, A.S. Al-Harthi and L.E. Wenger, "X-ray photoelectron spectroscopy (XPS) and magnetization studies of molybdenum-phosphate glasses", J. Non-Crystalline Solids 212, 180, 1997.

36. **G.D. Khattak**, M.A. Salim, L.E. Wenger and A.H. Gilani, "X-ray photoelectron spectroscopy (XPS) and magnetization studies of iron-sodium borate glasses", J. Non-Crystalline Solids, 244 (1999) 128.

37. A.M. Al-Shukri, **G.D. Khattak** and M.A. Salim, " Electrical conductivity of Molybdenum phosphate (MoO3:P2O5) glasses," Journal of Materials Science, 35 (2000) 123.

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38. **G.D. Khattak**, M.A. Salim, L.E. Wenger and A.H. Gilani, "X-ray photoelectron spectroscopy (XPS) and magnetization studies of copper-vanadium phosphate glasses", J. Non-Crystalline Solids, 262 (2000) 66.

39. M.A. Salim, **G.D. Khattak**, P.S. Fodor and L.E. Wenger, "X-ray photoelectron spectroscopy (XPS) and magnetization studies of iron-vanadium phosphate glasses, J. Non-Crystalline Solids, 289 (2001) 185.

40. **G.D. Khattak** and M.A. Salim, " X-ray photoelectron spectroscopic (XPS) of Zinc-Tellurite glasses", J. Electron Spectroscopy and Related phenomena, 123 (2002) 47.

41. Manford Chinkhota, P.S. Fodor, **G.D. Khattak,** and L.E. Wenger, " Investigation of the Magnetic Properties in strontium-borate vanadate Glasses, J. Applied Physics 91 (2002) 8269.

42. M.A. Salim,**G.D. Khattak**, N. Tabet, and L.E. Wenger, "X-ray photoelectron spectroscopy (XPS) of copper-sodium tellurite glasses, J. Electron Spectroscopy and related Phenomena 128 (2003) 75.

43. A. Mekki, **G.D. Khattak**, and L.E. Wenger, "Structure and magnetic properties of lead-vanadate glasses, J. Non-Crystalline Solids 330 (2003) 156-167.

44. A. Mekki, **G.D. Khattak**, D. Holland, M. Chinkhota, and L.E. Wenger, "Structure and magnetic studies of vanadium-sodium silicate glasses", J. Non-Crystalline Solids 318 (2003) 193-201.

45. G.D. Khattak, N.Tabet, M.A. Salim, "X-ray photoelectron spectroscopic studies of vanadium-strontium-borate $[(V_2O_5)_x\ (SrO)_{0.2}\ (B_2O_3)_{0.8-x}]$ oxide glasses", J. Electron Spectroscopy and related Phenomena 133 (2003) 103-111.

46. G.D. Khattak, A. Mekki, " X-ray photoelectron spectroscopic studies of copper tellurite glasses" Physica Scripta 70 (2004) 187.

47. G.D. Khattak, A. Mekki and L.E. Wenger, "Structure and Redox state of copper in copper tellurite glasses" J. Non-Crystalline Solids 337 (2004) 174.

48. G.D. Khattak, N. Tabet, " Local Structure and Redox State of vanadium in strontium-vanadate$[(V_2O_5)_x\ (SrO)_{1-x}]$ oxide glasses", J. Electron spectroscopy and related phenomena 136 (2004) 257.

49. G.D. Khattak, N. Tabet, L.E. Wenger, "Local Structure and Redox State of vanadium in strontium-vanadate $[(V_2O_5)_{0.5}\ (SrO)_{0.5-y}\ (B_2O_3)_y]$ oxide glasses". Physics & Chemistry of Glasses 46 (2005) 165.

50. A. Mekki, **G.D. Khattak,** " An XPS Study of iron – sodium-tellurite Glasses" Physics & Chemistry of Glasses 46 (2005) 161.

51. G.D. Khattak, A. Mekki, L.E. Wenger, "Structural and magnetic properties of $MoO_3 - TeO_2$ glasses, J. Non-Crystalline Solids 351 (2005) 2493.

52. G.D. Khattak, N. Tabet, L.E. Wenger, "Structural properties of glasses in the series $(SrO)x(V2O5)_{1-x}$, $(SrO)_{0.5-y}(B2O3)y(V2O5)_{0.5}$, and $(SrO)_{0.2}(B2O3)_z(V2O5)_{0.8-z}$ " Physical Review B 72 (2005) 104203.

53. A. Mekki, **G.D. Khattak** and L.E. Wenger" Structure and magnetic investigations of Fe2O3 – TeO2 glasses J. Non-Crystalline Solids 352 (2006) 3326.

54. G.D. Khattak & A. Mekki **"** Structure and Magnetic properties of Vanadium-Phosphate Glasses" (submitted).

55. A. Mekki & **G.D. Khattak "** DC conductivity studies of vanadium-phosphate glasses" (submitted).

56. G.D. Khattak & A. Mekki **"** Structure and Magnetic properties of Vanadium-tellurite Glasses" (to be submitted soon).

57. G.D. Khattak & A. Mekki **"** Structure and Magnetic properties of Copper-sodium Germinate Glasses" (to be submitted soon).

58. A. Mekki & **G.D. Khattak "** DC conductivity studies of vanadium-tellurite glasses" (in progress).

59. A. Mekki & **G.D. Khattak "** DC conductivity studies of vanadium-sodium germinate glasses" (in progress).

B. Conference Papers:

1. L.E. Wenger, **G.D. Khattak** and P.H. Keesom "Calorimetric, resistance and susceptibility investigations of $(V_{1-x}Ti_x)_2O_3$ at Low Temperature", Bulletin of the American Phys. Soc., April 1977.

2. **G.D. Khattak**, "Specific heat of V_4O_7 between 0.3 and 50K" International Conference on Solid State Physics", Lahore, Pakistan, 1979.

3. G.W. Hunter, L.E. Wenger, J.A. Mydosh, and **G.D. Khattak**, "Anisotropic magnetic field effects in a dilute YGd alloy". International Conference on Magnetism, 1985.

4. L.Henry, L.E. Wenger, **G.D. Khattak**, and A. Tari, "Calorimetric study of the magnetic ordering in $HO(Co, Rh)_2$ alloys", Bulletin of the American Physical Society 34, 566, 1989.

6. M.S. Hussain, **G.D. Khattak** and V. Keith, "Effects of compositional variations on the superconductivity of La-(Ba-Sr-Ca)-Cu-O ceramic systems", presented in the Conference entitled "The Third National Meeting of Chemists at KFUPM, 1989".

7. Manford Chinkhota, P.S. Fodor, G.D. Khattak, and L.E. wenger, " Investigation of the Magnetic properties in Transition Metal Oxide Glasses" Proceedings of 46^{th} Annual conference on Magnetism & Magnetic Materials, Nov. 11-15, 2001.

8. G.D. Khattak and M.A. Salim, " X-ray photoelectron spectroscopy (XPS) studies of Iron – vanadium phosphate glasses" Proceedings of The First Saudi Science Conference, p. 103 (2001).

9. G.D. Khattak, A. Mekki, M. Al-Shukri, " XPS studies of copper tellurite glasses", Conference in Spain (2003)

10. G.D. Khattak, N. Tabet, A. Mekki, " X-ray photoelectron spectroscopic (XPS) studies of $(SrO)_x(V_2O_5)_{1-x}$ oxide glasses" The Second Saudi Science Conference, Jeddha. (2004).

11. A. Mekki, G.D. Khattak, " XPS studies of copper-tellurite glasses" The Second Saudi Science Conference, Jeddha. (2004).

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C. Manuals Written:

PHYS 102 Lab Manual by Drs. M.S. El-Kateb, **G.D. Khattak** and R.F. Lynch (As mentioned, modified version of the same Lab Manual is being used)