Curriculum Vita (C. V.)

Name : ***Prof. Dr. Gamal A. H. Mekhemer***

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Date of Brith: 09. 06. 1963- El-Minia, Egypt.

Nationality: Egyptian

Marital status: Married with four children

Language: English (good) and Germay (good)

Education: **B.Sc. (Honos)** Minia University, 1985, General Chemistry, major grade: Excellent with the first class Hons. **M. Sc**., Minia University, 1990, (Interfacial Chemistry and Genesis of Supported Chromia Catalysts). P**h.D**. Minia University, 1995, (Spectroscopic Studies of adsorption and Surface Reactions on Catalytic Solids), A scientific channel between Minia University (Prof. Dr. M. I. Zaki) and Munich University, (Prof. Dr. H. Knozinger).

Employment: 1985-1990 Demonstrator and M.Sc. Student at Minia University
1990-1992 Assistant Lecturer at Minia University, Egypt
1992-1994 Ph.D. Student at Munich University, Germany
1994-1995 Assistant Lecturer at Minia University, Egypt
1995-2000 Lecturer of Physical Chemistry at Minia University, Egypt
2000- 2006 Assistant Professor of Physical Chemistry at Minia University.
2006- till Now Professor of Physical Chemistry at Minia University, Egypt.

Experience: Taught undergraduate and graduate courses in Physical chemistry, surface chemistry and catalysis, solid state chemistry, statistical thermodynamics, thermochemistry, ceramic materials and paints, methods of chemical analysis, chemistry of liquids, gases and solutions. Co-supervised M. Sc. (5) and Ph.D. (1) students.

Research activity:

Surface Chemistry and Heterogeneous Catalysis.

Minia University: Characterization of acidic and basic surfaces of solid metal oxides and supported metal oxide catalysts, bulk and texture, surface chemistry and catalysis of theses catalysts were characterized by IR spectroscopy, XRD, UV-Vis diffuse reflectance specroscopy and Nitrogen adsorption at $-195^{o}C$ and GC. Adsorption and surface reactions of alcohol's over the surface of solid metal oxide catalysts to determine the activity and selectivity of the catalyst, and mechanisms and pathways of surface reactions.

Munich University: Structure, characterization of acidic properties and activity of solid superacid catalysts using Laser Raman spectroscopy, XRD, FTIR, DRS, spectroscopies and GC i.e., adsorption of CO at low temperatures (80 K), NH_3 and isomerization of n-butane.

Research Interests: Vibrational spectroscopy and surface chemistry of solid metal oxides, supported metal oxides and solid superacid catalysts as follows:

1. Characterization of the surface acidity and basicity of metal oxides and/or supported oxides through adsorption probes such as: of pyridine, CO, CO_2, $CDCl_3$ and acetonitrile, etc., by using IR spectroscopy.
2. Characterization of the surface structure of solid superacids by different probes.
3. Study of the catalytic activity and selectivity of these previously characterized (1,2) samples towards the decomposition of 2-propanol, acetic acid, methylbutynol and n-butane using IR spectroscopy and GC.

M.Sc. Thesis:

Title **: "Interfacial Chemistry and Genesis of Supported Chromia Catalysts"**

Date : January 1990; Faculty of Science, Minia University.

Ph.D. Thesis

Title **: "Spectroscopic Studies of Adsorption and Surface Reactions on Catalytic Solids"**

Date **:** March 1995; Faculty of Science, Minia University.

List of puplications:

1- *Title* : " Chromia on SiO_2 and Al_2O_3 Catalysts: Surface Structural Consequences of Interfacial Events in the Impregnation Course of Aquated Cr (III) Ions.

Authors: M. I. Zaki, S. A. A. Mansour, F. Taha and **G. A. H. Mekhemer**,

Journal: **Langmuir,** 8, 1992, 727

2- *Title* : " Superacid properties of sulfated ZrO_2 as measured by Raman and ^1H- MAS- NMR"

Authors: T. Riemer, D. Spielbaur, M. Hunger, **G. A. H. Mekhemer** and H. Knozinger

Journal: **J. Chem. Soc., Chem. Commun**.,1994, 1181

3- *Title* : " N-butane isomerization on sulfated ZrO_2. deactivation and regeneration as studied by Raman, UV-Vis diffuse reflectance and ESR spectroscopy"

Authors : D. Spielbaur, **G. A. H. Mekhemer,** E. Bosch and H. Knozinger

Journal : **Catal. Letteres,** 36, 1996, 59

4- *Title* : " Acidity of sulfated ZrO_2 as studied by FTIR-Spectroscopy of adsorbed CO and NH_3 as probe molecules"

Authors : D. Spielbaur , **G. A. H. Mekhemer**, M. I. Zaki and H. Knozinger

Journal : **Catal. Letters**, 40, 1996, 71

5- *Title* : " Characterization and catalytic properties of sulfated zirconia"

Authors : D. Spielbaur, **G. A. H. Mekhemer**, T. Riemer and H. Knozinger

Journal : **DGMK-Conference,** 1996 in Berlin**, "Catalysis on Solid acids and bases"** pp. 79-86**.**

6- *Title* : " Ceria on silica and alumina catalysts: dispersion and surface acid- base properties as probed by X-ray diffractometry, UV-Vis diffuse reflectance and in situ IR absorption studies"

Authors : M. I. Zaki, G. A. M. Hussien, S. A. A. Mansour, H. M. Ismail and **G. A. H. Mekemer.**

Journal : **Colloids and Surfaces**, A: Phys. Chem. & Eng. Aspects 127, 1997, 47.

7- *Title* : " Adsorption of pyridine on pure and supported TiO_2 catalysts as studied by Infrared spectroscopy"

Authors : **G. A. H. Mekhemer**

Journal : Second Inter. Conference. on Basic Sciences and Advanced Technology. **Assiut University,** Assiut, Egypt, Nov. 5-8, 2000.

8 - *Title* : " Acidic and basic properties of alumina supported ceria catalysts: An IR spectroscopy"

Authors : **G. A. H. Mekhemer**

Journal : The 6th Inter. Conf. on Chemistry and Its Role in Development. **Mansoura University**, Monsoura, Egypt, April 16-19, 2001.

9- *Title* : " Structure and acidic properties of phosphate modified zirconia"

Authors: D. Spielbaur, **G. A. H. Mekhemer**, T. Riemer, M. I. Zaki and H. Knozinger

Journal: **J. Phys. Chem**., 101, 1997, 4681**.**

10- *Title* : " Characterization of phosphated zirconia by XRD, Raman and IR spectroscopy"

Author : **G. A. H. Mekhemer**

Journal : **Colloids and surfaces**, A: Physicochem. & Eng. Aspects 141, 1998, 227.

11 - *Title* : " Low temperature IR spectrsocopy of CO adsorption on calcined supported CeO_2: Probing adsorbed species and adsorbing sites"

Author : **G. A. H. Mekhemer** and M. I. Zaki

Journal : **Adsorption Sci. and Techn**., 15, 1997, 377**.**

12 - *Title* : " Structure analysis of phosphated zirconia catalysts using XRD and nitrogen adsorption methods"

Authors : **G. A. H. Mekhemer** and H. M. Ismail

Journal : **Colloids and surfaces**, A: Physicochem. & Eng. Aspects 164, 2000, 227.

13- *Title* : " Surface characterization of silica supported cobalt oxide catalysts"

Authors : **G. A. H.Mekhemer**, H. M. M. Abd-Allah and S. A. A. Masour

Journal: **Colloids and surfaces**, A: Physicochem. & Eng. Aspects, 160, 1999, 251.

14- *Title* : " The influence of phosphate and sulfate ions on the surface texture of alumina"

Authors : A. K. H Nohman, **G. A. H. Mekhemer**, N. E. Fouad and H. A. Khalaf.

Journal : **Adsorption Sci. & Techn.,** 17, 1999, 665..

15- *Title* : " Surface to bulk characterization of phosphate modified aluminas"

Authors : **G. A. H. Mekhemer**, A. K. H. Nohman, N. E. Fouad and H. A. Khalaf.

Journal : **Colloids and surfaces**, A: Physicochem. & Eng. Aspects, 161, 2000, 439.

16- *Title* : " Laser Raman spectroscopy of supported CeO_2 and TiO_2 catalysts"

Authors : **G. A. H. Mekhemer**

Journal : **Bull. Fac. Sci. Assiut Uni.,** 26 (2-B), 1997, 31.

17- *Title* : " Formation and characterization of thulium oxide from hydrated thulium acetate.Thermoanalytical, spectroscopic and microscopic studies"

Authors : G. A. M. Hussein, **G. A. H. Mekhemer** and B. A. A. Balboul

Journal: **Pittsburgh Conference 50th Anniversary,** Pittcon 99, Orange County Convention Center Orlando, Florida, 1999.

18- *Title* : " Pyridine as a probe for characterization of surface sites on Chromium and zirconium oxides: A diffuse reflectance Spectroscopic study "

Authors : **G. A. H. Mekhemer**, N. E. Fouad, A. K. H. Nohman and H. A. Khalaf,

Journal: **6th Ibn Sina International Conference**,"Pure and Applied Heterocyclic Chemistry", **Cairo,** 1997.

19- *Title* : " Characterization of ceria and titinia supported catalysts by Laser Raman and UV-Vis diffuse reflectance spectroscopy"

Authors : **G. A. H. Mekhemer**

Journal : **First Symposium of Pure and Applied Chemistry**, Irbid Jordan, 1998.

20- *Title* : " Holmium oxide from holmium acetate, formation and characterization: thermoanalytical studies"

Authors : G. A. M. Hussein and B. A. A. Balboul **G. A. H. Mekhemer**

Journal : **J. Analy. & Appl. Pyrol.**, 56, 2000, 263.

21- *Title* :" Formation and surface characterization of thulium oxide catalysts"

Authors : G. A. M. Hussein, **G. A. H. Mekhemer** and B. A. A. Balboul.

Journal : **Phys. Chem. Chem. Phys**., 2, 2000, 2033.

22- *Title* :" Thermal genesis course and characterization of lanthnum oxide"

Authors : **G. A. H. Mekhemer** and B. A. A. Balboul

Journal : **Colloids and Surfaces**, A: Physicochem. & Eng. Aspects, 181 2001, 19.

23- *Title* : " Surface structure and acid-base properties of lanthanum oxide dispersed on silica and alumina catalysts"

Authors : **G. A. H. Mekhemer**

Journal : **Phys. Chem. Chem. Phys.,** 4, 2002, 5400**.**

24- *Title* : " Surface modifications of some catalyst oxides via foreign salt additives"

Authors : Rasha A. Fathy, **G. A. H. Mekhemer,** Hamdy M. Ismail and Seham A. A. Mansour.

Journal : **Bull. Fac. Sci. Assiut Uni.,** 31(1-B), 2002, 1.

25- *Title* : " Holmium and uranium modified NiO/SiO_2 and NiO/TiO_2 catalysts"

Authors : Ahmed K. H. Nohman, **G. A. H. Mekhemer,** Mostafa A. Tolba and Seham A. A. Mansour.

Journal : **Bull. Fac. Sci. Assiut Uni.,** 32 (2-B), 2003, 1.

26- *Title* : " Surface acid-base properties of holmium oxide catalyst: *in situ* infrared spectroscopy"

Authors : **G. A. H. Mekhemer**

Journal : **Appl. Catal.,** 275, 2004, 1.

27- *Title* : " Dispersion of ceria and lanthana on silica and alumina supports X-ray diffractometry and nitrogen sorptometry studies "

Authors : **G. A. H. Mekhemer** and H. M. Ismail

Journal : **Colloids and surfaces, Phys. Chem. & Eng. Aspects,** 235, 2004, 129.

28- *Title* : " Qualitative and quantitative assessments of acid and base sites exposed on polycrystalline MgO surfaces: Thermogravimetric calorimetric and in situ FT-IR spectroscopic study combination"

Authors : **G. A. H. Mekhemer** , S. A. Halawy, M. A. Mohamed and M. I. Zaki.

Journal : **J. Phys. Chem. B**.; 108, 2004, 13379.

29- *Title* : "Ketonization of acetic acid vapour over polycrystalline magnesia: in situ Fourier transform infrared spectroscopy and kinetic studies"

Authors : **G. A. H. Mekhemer** , S. A. Halawy, M. A. Mohamed and M. I. Zaki

Journal : **J. Catal**. 230, 2005, 109.

30- *Title* : "Sulfated alumina catalysts: Consequences of sulfate content and source".

Authors : **Gamal. A. H. Mekhemer** , Hussein A. Khalaf, Seham A. A. Mansour and Ahmed K. H. Nohman.

Journal : **Monatshefte Für Chemie,** 136, 2005, 2007.

31- *Title* : " Impacts of sulfate contant and source on structure and activity of sulfated alumina catalysts"

Authors : **G. A. H. Mekhemer,** Hussein A. Khalaf, Seham A. A. Mansour and Ahmed K. H. Nohman.

Journal : **El-Minia Sci. Bull. ,** 16, 2005, 28.

32- *Title* : " Preparation of phosphated and sulfated aluminas in relation to their structure and texture"

Authors : Hussein A. Khalaf, **G. A. H. Mekhemer,** Seham A. A. Mansour and Ahmed K. H. Nohman.

Journal : **El-Minia Sci. Bull. ,** 16, 2005, 1.

33- *Title* : " Surface characterization of zirconia, holmium oxide/ziconia and sulfated zirconia catalysts"

Authors : **G. A. H. Mekhemer**

Journal : **Colloids and surfaces, Phys. Chem. & Eng. Aspects**, 274, 2006, 24.

34- *Title* : " Influence of phosphonation and phosphation on surface acid-base and morphological properties of CaO as investigated by in situ FTIR spectroscopy and electron microscopy "

Authors : Mohamed I. Zaki, Helmut Knozinger, Berned Tesche and **Gamal A. H. Mekhemer** .

Journal : **J. Colloids and Interface Science,** 303, 2006, 9.

35- *Title* : " Surface characterization of silica supported copper oxide catalysts"

Authors : Seham A. A. Mansour, **Gamal A. H. Mekhemer** and Hanaa M. M. Mahmoud

Journal: **10th Ibn Sina International Conference**,"Pure and Applied Heterocyclic Chemistry", **Luxor, Egypt,** February 2007.

36- *Title* : " Surface acid – base properties of lanthana and sulphate ions dispersed on γ-alumina: in situ infrared spectroscopy "

Authors : **Gamal A. H. Mekhemer**

Journal: **5th International Conference on Rare Earth Development and applications** ", **Baotou, China,** August. 2007.

37- *Title* : "Chemical and morphological consequences of acidification of pure, phosphated and phosphonated CaO: Influence of CO_2 adsorption.

Authors : Mohamed I. Zaki, Helmut Knozinger, Berned Tesche , **Gamal A. H. Mekhemer** and Hans-Josef Bongard.

Journal : **Langmuir,** 24(13), 2008, 6745.

38- *Title* : Impacts of CuOx additive on the CO oxidation activity and related surface and bulk properties of a *nano*-CeO_2 catalyst,

Author : A. Bumajdad, M.A. Hasan, M.I. Zaki, **G.A.H. Mekhemer**, L. Pasupulety and A. Mathew

Journal : **Reaction Kinetics, Mechanisms and Catalysis**, 99, 345 (**2010**).

39- *Title* : Surface texture and specific adsorption sites of sol–gel synthesized anatase TiO2 nanoparticles,

Author : M.I. Zaki, **G.A.H. Mekhemer,** N.E. Fouad, T.C. Jagadale and S.B. Ogale,

Journal : **Matertials Research Bulletin**, 45, 1470 (**2010**).

40- *Title* : TiO_2 nanoparticle size dependence of porosity, adsorption and catalytic activity,

Author : M.I.Zaki, N.E. Fouad, **G.A.H. Mekhemer**, T.C. Jagadale and S. B. Ogale,

Journal : **Colloids and Surfaces A**, 385, 195 **(2011).**

41- *Title* : N_2 Sorptiometric Study of Phosphation and Dispersion of Lanthana on Alumina Catalysts,

Author : **G. A. H. Mekhemer**, A.F. Bukhzam, A.S. El-Towaty and M.I. Zaki,

Journal **: Adsorption Science and Technology**, 29, 927 **(2011)**.

42- *Titl*e : Spectroscopic characterization-catalytic activity correlation of molybdena based catalysts,

Author : H. Al-Kandari, A.M. Mohamed, S. Al-Kandari, F. Al-Kharafi, **G. A. H. Mekhemer**, M.I. Zaki and A. Katrib,

Journal **: Journal of Molecular Catalysis A**, 368-369,1**(2013)**.

43- *Title* : Particle characteristics and reduction behavior of synthetic magnetite

Author : W. Ramadan, M. I. Zaki, N. E. Fouad and **G. A. H. Mekhemer,**

Journal **: Journal of Magnetism and Magnetic Materials**, Proof**,** (2013).