

Mohamed Abdel Salam, PhD, MCIC

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1. PERSONAL INFORMATION

- Date of Birth: 16th of June 1969.
- Nationality: Canadian.
- Martial Status: Married with two children.

2. EDUCATIONAL QUALIFICATIONS

- **Ph.D.** *December 2006* (Carleton University, Ottawa, Ontario, Canada):
Specialization in Physical Chemistry with strong background in nanochemistry.
- **M. Sc.** *September 2003* (Carleton University, Ottawa, Ontario, Canada):
Specialization in Electrochemistry and Environmental Chemistry.
- **Ph.D.** *May 2001* (Ain Shams University, Cairo, Egypt)
Specialization in Physical Chemistry.
- **M.Sc.** *May 1994* (Ain Shams University, Cairo, Egypt)
Specialization in Physical Chemistry.
- **B. Sc. With honour degree** *May 1990* (Ain Shams University, Cairo, Egypt)
Specialization in General Chemistry.

3. AFFILIATION

- **Member** of the Canadian Advisory Committee on the International Standardization Organization for Nanotechnologies (CAC/ISO/TC229 – Nanotechnologies) (February 2007-present).
Setting standards for production, measurement and characterization of different nano materials.
- **Member** of the Chemical Institute of Canada.
- **Member** of the Canadian Society for Chemistry.
- **Member** of the Canadian Society for Technology.

- **Member** of the Chemistry Department at King Abdulaziz University Accreditation Committee.
- **Member** of the Center of Excellence of Environmental Studies projects referees Committee at King Abdulaziz University.
- **Referees** for many international chemistry journals.

4. RESEARCH EXPERIENCE

- Modification and characterization of different nano materials such as carbon nanotubes.
- Purification of carbon nanotubes.
- Environmental application of nano materials.
- Kinetic and thermodynamic studies of adsorption on nano materials.
- Proteins analysis using MALDI-TOF-MS.
- Toxicology, *in vitro* and *in vivo*.
- Method development for the determination of different analytes; pentachlorophenol (PCP), polychlorinated biphenyls (PCBs), polybrominated biphenyl (PBBs), endocrine disrupting phenolic compounds; such as Bisphenol A, and Pharmaceuticals and Personal Care Products (PPCPs) such as acetaminophen, estrone and 17 β - estradiol, using GC-MS and GC-ECD.
- Method development to determine the chemical speciation of different metals and organic wastes in the natural environment using different voltammetric techniques; such as anodic and cathodic stripping voltammetry including the development of a new electrochemical approach to determine free-metal-ion-activity and total metal concentrations at low concentration in freshwaters.

5. CURRENT RESEARCH PROJECTS

- Carbon nanotubes derivatives/chitosan derivatives and their application as ion exchanging materials.
- Magnetic carbon nanotubes.
- Electrodeposition of carbon nanotubes / conductive polymers composites and their applications for corrosion protection.
- The formation of carbon nanotubes / ferrites / conductive polymers composites and their applications.
- Chemical modification of carbon nanotubes and their applications for environmental remediation.
- Purification of carbon nanotubes and their applications in fuel cells.
- Cytotoxicity of nano materials.
- Nano materials and its role in hydrogen storage for hydrogen fuel cell.

6. TEACHING AND WORK EXPERIENCE

- **Assistant Professor of Physical Chemistry, KAU, Saudi Arabia**
(September 2007-present)

Modification of carbon nanotubes and their applications in different fields such as removal of pollutants and remediation of the environment, corrosion protection, and risk assessment of different nanomaterials.

- **Visiting Scientist Frascati National Laboratories, Frascati, Italy**
(July 2009 – August 2009)

Production, purification, and chemical modification carbon nanotubes.

- **Post Doctoral Fellow, Health Canada (January 2007- September 2007)**

Preparation, modification, and characterization of different nano materials.

Application of nano-materials for the analysis of different proteins in biological samples and their analysis using MALDI-TOF-MS. Toxic effect of nano particles inhalation on living organisms; *in vitro* and *in vivo*.

- **Chemistry Professor, Algonquin College, School of Advanced Technology (SAT) (January 2005- September 2007)**

Teaching general chemistry to the first year students.

- **Chemistry Instructor, Carleton University, Ottawa, Ontario, Canada**
(September 2001-December 2006)

- Supervised laboratories in 1st year and 2nd year chemistry students.

- **Research Assistant, Carleton University, Ottawa, Ontario, Canada**
(September 2001-December 2006)

- Chemical modification and characterization of carbon nanotubes.

- Kinetic and thermodynamic studies of different organic pollutants adsorption on chemically modified carbon nanotubes.

- The application of different chemically modified carbon nanotubes as new SPE adsorbents for the extraction of different compounds from aqueous solution.

- Method development for the determination of different analytes; PCP, PCBs, PBBs, and steroids, in different matrix.

- **Chief Chemist, South Umbaraka Oil Company, Cairo, Egypt (June 1994-August 1998)**

- Monitoring and evaluation of the oil field chemicals (Pour Point Depressing, emulsifier, and corrosion inhibitors)

- Installing and monitoring of different types of corrosion protection (anodic, cathodic and inhibitors)

- Quality control for oil treatment and shipping.

7. CONTRIBUTIONS TO RESEARCH AND DEVELOPMENT

I. PUBLICATIONS:

1. **Mohamed Abdel Salam**, R.C. Burk, *Thermodynamics and Kinetics Studies of Pentachlorophenol Adsorption from Aqueous Solutions by Multi-Walled Carbon Nanotubes*, (2009) (**Water, Air, and Soil Pollution DOI 10.1007/s11270-009-0227-1**).
2. **Mohamed Abdel Salam**, H. Shadnia, James Wright, R.C. Burk, *Experimental and theoretical thermodynamic studies of the adsorption of polyhalogenated organic compounds from aqueous solution by chemically modified multi-walled carbon nanotubes*, (2009) (Accepted Journal of Solution Chemistry, JOSL1027R2).
3. Abou-Elhagag A.Hermas, **Mohamed Abdel Salam** and Salih S. Al-Juaid, *Electrochemical coating of Stainless Steel with Multi-walled carbon nanotubes/polyaniline Composite Layer*, (International Journal of Nanomanufacturing, 4 (2009) 166-174).
4. S. N. Basahel, S. A. Al Thabaiti, A. Y. Obaid, M. Mokhtar, and **M. Abdel Salam**, *Chemical Modification of Muti-Walled Carbon Nanotubes Using Different Oxidizing Agents: Optimization and Characterization*, (International Journal of Nanoparticles, 2 (2009) 221-229).
5. **Mohamed Abdel Salam**, R.C. Burk, *Solid phase extraction and determination of poly halogenated pollutants from freshwater using novel chemically modified multi-walled carbon nanotubes using gas chromatography*, Journal of Separation Science (2009) 32, 1060-1068.
6. **Mohamed Abdel Salam**, R.C. Burk, *Novel application of modified multi-walled carbon nanotubes as a solid-phase extraction adsorbent for the determination of polyhalogenated organic pollutants in aqueous solution*, Analytical and Bioanalytical Chemistry (2008) 390:2159–2170.
7. **Mohamed Abdel Salam**, R.C. Burk, *Thermodynamic of Pentachlorophenol Adsorption From aqueous solution by oxidized multi-walled carbon nanotubes*, Applied Surface Science 255 (2008) 1975–1981.
8. **Mohamed Abdel Salam**, Dharani D. Das, Yunus Siddiqui, Jingwen Guan, Ranjeeta Mallaik, Sabit Cakmak, Nimal De Silva, Benoit Simard, Renaud Vincent, Prem Kumarathanan, *Cytotoxicity of Carbon Nanotube Variants: A Comparative In Vitro Exposure Study with Lung Epithelial and Macrophage Cells* (submitted to Nanotoxicology).

9. **Mohamed Abdel Salam**, Magdy Y. Abdelaal, and Mohamed S.I. Makki, Preparation and characterization of multi-walled carbon nanotubes/chitosan nanocomposite and their application as ion exchanging materials (**In Progress**).
10. **Mohamed Abdel Salam**, M.A. Gabal, S.A. Al-Thabaiti, A.Y. Obaid, A.O. Al-Youbi (2009), Preparation and characterization of magnetic multi-walled carbon nanotubes/ferrite composite and their application for the removal of organic pollutants from aqueous solution (**In Progress**).
11. **Mohamed Abdel Salam**, A.Y. Obaid, S.A. Al-Thabaiti, A.A. Hermas, Corrosion behavior of carbon steel in sulfuric acid containing carbon nanotubes (**In Progress**).
12. **Mohamed Abdel Salam**, Salih S. Al-Juaid, A.A. Hermas, Electrochemical Deposition of Carbon Nanotubes –Poly(o-phenylenediamine) Composite on the stainless steel surface (**In Progress**).
13. **M. Abdel Salam**, M. Mokhtar, S. N. Basahel, S. A. Al Thabaiti, A. Y. Obaid, *Removal of chlorophenol from aqueous solution by multi-walled carbon nanotubes: Kinetic and thermodynamic studies* (Submitted to Applied Surface Science).
14. **Mohamed Abdel Salam**, R.C. Burk, *Chemical modification and Characterization of Multi-walled Carbon Nanotubes using Octadecyl amine and Polyethylene Glycol*, submitted to Particle and Particle System Characterization (Manuscript number ppsc.200900084).
15. J. W. Guthrie, N.M. Hassan, **M.S.A. Salam**, C.L. Chakrabarti and D.C. Grégoire. *Speciation of Ni(II), Cu(II), Zn(II) and Cd(II) in metal-impacted lake waters: A comparison of experimental results with predictions from the Windermere Humic Aqueous Models V and VI*. Analytica Chimica Acta, 2005, 528 (2), 205-218.
16. Guthrie, J. W.; Mandal, R.; **Salam, Mohamed. S. A.**; Hassan, N. M.; Murimboh, J.; Chakrabarti, C. L.; Back, M. H.; Gregoire, D. C., *Kinetic studies of nickel speciation in model solutions of a well-characterized humic acid using the competing ligand exchange method*. Analytica Chimica Acta, 2003, 480 (1), 157-169.

17. Mandal, Rupasri; **Salam, Mohamed S. A.**; Chakrabarti, Chuni L.; Back, Margaret H. *Competition An Electrochemical Investigation of Complexation of Pb(II) by a well Characterized Fulvic Acid in Model Systems-Effect of Competition wit Major Cations and Trace Metals*. *Electroanalysis* 2003, 15 (10), 903-906.
18. Celso, Valbona; Murimboh, John; **Salam, Mohamed S. A.**; Chakrabarti, Chuni L. *A Kinetic Study of Nickel Complexation in Model Systems by Adsorptive Cathodic Stripping Voltammetry*. *Environmental Science and Technology*, 2001, 35 (6), 1084-1089.
19. Mandal, Rupasri; **Salam, Mohamed S. A.**; Murimboh, John; Hassan, Nouri M.; Chakrabarti, Chuni L.; Back, Margaret H.; Gregoire, Denis C., *Competition of Ca(II) and Mg(II) with Ni(II) for Binding by a Well-Characterized Fulvic Acid in Model Solutions*. *Environmental Science and Technology*, 2000, 34 (11), 2201-2208.
20. Magdi Z. Sefain, Mohamed H. Fadl, Nahla A. El-Wakil, **Mohamed S. Abdel Salam**, Thermal Behavior of Linen and chemically treated linen fibres, *Polymer Degradation and Stability*, 1995, 50, 195-198.

1. CONFERENCE PRESENTATIONS:

1. **Mohamed Abdel Salam, (2009)**, Multi-walled carbon nanotubes and their roles for environmental remediation. *Nanoscience and Nanotechnology 2009 Conference*, 19-22 October 2009, Italy (Oral Presentation)
2. **Mohamed Abdel Salam, R.Burk, (2009)**, Surface Functionlization of multi-walled carbon nanotubes and their application as novel materials for solid phase extraction of different persistence organic pollutants from freshwater samples. *92th Canadian Society for Chemistry Conference an Exhibition*, May 30-June 3, 2009, Hamilton, Ontario, Canada. (Poster Presentation)
3. **Mohamed Abdel Salam, M.A. Gabal, S.A. Al-Thabaiti, A.Y. Obaid, A.O. Al-Youbi (2009)**, Preparation and characterization of magnetic multi-walled carbon nanotubes/ferrite composite and their application for the removal of organic pollutants from aqueous solution., *92th Canadian Society for Chemistry Conference an Exhibition*, May 30-June 3, 2009, Hamilton, Ontario, Canada. (Poster Presentation)
4. **Mohamed Abdel Salam, A.Y. Obaid, S.A. Al-Thabaiti, A.A. Hermas (2009)**, Corrosion behavior of carbon steel in sulfuric acid containing carbon nanotubes., *92th Canadian Society for Chemistry Conference an Exhibition*, May 30-June 3, 2009, Hamilton, Ontario, Canada. (Poster Presentation)

5. **Mohamed Abdel Salam**, M. Abdelaal (2009), Preparation and characterization of multi-walled carbon nanotubes/chitosan nanocomposite and their application as ion exchanging materials, 92th Canadian Society for Chemistry Conference an Exhibition, May 30-June 3, 2009, Hamilton, Ontario, Canada. (Poster Presentation)
6. **Mohamed Abdel Salam**, M. Mokhtar, S. Basahel (2009), Adsorption of chlorophenol from aqueous solution by multi-walled carbon nanotubes: kinetics and thermodynamic studies, 92th Canadian Society for Chemistry Conference an Exhibition, May 30-June 3, 2009, Hamilton, Ontario, Canada. (Poster Presentation)
7. **Mohamed Abdel Salam**, Robert Burk, Chemical Modification of Multi-walled carbon nanotubes and their application for solid phase extraction of different pollutants from aqueous samples. The International Conference For NanoTechnology Industries, NANO Conference 2009, April 5-7, 2009, Riyadh, Kingdom of Saudi Arabia. (Oral Presentation)
8. Magdy Y. Abdelaal, Mohamed S.I. Makki, **Mohamed Abdel Salam**, (2009), Preparation and characterization of nanocomposites from MWCNTs and Chitosan derivatives for ion exchange applications, The International Conference For NanoTechnology Industries, NANO Conference 2009, April 5-7, 2009, Riyadh, Kingdom of Saudi Arabia (Poster Presentation)
9. **Mohamed Abdel Salam**, R.C. Burk, Chemical Modification of Multi-walled carbon nanotubes and their application for solid phase extraction of different pollutants from aqueous samples. The International Conference For NanoTechnology Industries, NANO Conference 2009, April 5-7, 2009, Riyadh, Kingdom of Saudi Arabia.
10. **Mohamed Abdel Salam**, R.C. Burk,, H. Shadnia, Experimental and Computer Modelling Thermodynamics Studies of Different Organic Compounds Adsorption by chemically modified Multi-Walled Carbon Nanotubes From Aqueous Solutions, The Taibah International Chemistry Conference (TICC-2009) – Al-Madinah Al-Munawwarah March 23 -25, 2009, KSA.
11. **Mohamed Abdel Salam**, Prem Kumarathanan, Yunus Siddiqui, and Renaud Vincent, Cytotoxicity of Pristine and Oxidized Single and Multi-Walled Carbon Nanotubes: Comparative study using Lung Epithelial Cell line (A-549) and Macrophage Cell line (J-774), The International Conference on Nanotechnology (ICON008) 17 – 19 June 2008, King Abdul Aziz University, Jeddah, Kingdom of Saudi Arabia.

12. **Mohamed Abdel Salam**, R.C. Burk, H. Shadnia, Experimental and Computer Modelling Thermodynamics Studies of Different Organic Compounds Adsorption by chemically modified Multi-Walled Carbon Nanotubes From Aqueous Solutions. The International Conference on Nanotechnology (ICON008) 17 – 19 June 2008, King Abdul Aziz University, Jeddah, Kingdom of Saudi Arabia.
13. S. N. Basahel, S. A. Al Thabaiti, A. Y. Obaid, M. Mokhtar, and **M. Abdel Salam**, Chemical Modification of Muti-Walled Carbon Nanotubes Using Different Oxidizing Agents: Optimization and Characterization, The International Conference on Nanotechnology (ICON008) 17 – 19 June 2008, King Abdul Aziz University, Jeddah, Kingdom of Saudi Arabia.
14. Abou-Elhagag A.Hermas, **Mohamed Abdel Salam** and Salih S. Al-Juaid, Electrochemical coating of Stainless Steel with Multi-walled carbon nanotubes/polyaniline Composite Layer, The International Conference on Nanotechnology(ICON008) 17 – 19 June 2008, King Abdul Aziz University, Jeddah, Kingdom of Saudi Arabia.
15. Prem Kumarathanan, **M. A. Salam**, S. Mohottalage, Y. Siddiqui, K. Subramanian, B. Simard, R. Vincent, Proteome Pattern Recognition Applied to Nanotoxicology: Differential Responses of Human Lung Epithelial Cells to Pristine and Modified Single-Walled and Multi-Walled Carbon Nanotubes, Canadian Proteomics Initiative, Ottawa, Ontario, Canada, June 15-June17, 2007 (Poster).
16. **Salam, M. S. A.**, Burk, R., (2006), Chemical functionalization and the production of stable suspension of multi-wall carbon nanotubes, 89th Canadian Society for Chemistry Conference an Exhibition, May 28-31, 2006, Halifax, Nova Scotia, Canada. (Oral Presentation)
17. **Salam, M. S. A.**, Burk, R., (2006), Adsorption of pentachlorophenol (PCP) from aqueous solution by multiwalls carbon nanotubes (MWCNTs), 89th Canadian Society for Chemistry Conference an Exhibition, May 28-31, 2006, Halifax, Nova Scotia, Canada. (Oral Presentation).
18. **Salam, M. S. A.**, Burk, R., (2006), The Application of Multi-Walled carbon Nanotubes as a new adsorbent for the solid Phase extraction of some persistent halogenated organic pollutants from aqueous solution, Ottawa-Carleton Chemistry Institute (OCCI) Symposium, May 19, 2006, Carleton University, Ottawa, Ontario, Canada. (Oral Presentation).
19. **Salam, M. S. A.**, Burk, R., (2006), The Application of Multi-Walled carbon Nanotubes as a new adsorbent for the solid Phase extraction of some persistent halogenated organic pollutants from aqueous solution,

EnviroAnalysis Conference, May 15-17, 2006, Toronto, Ontario, Canada.
(Oral Presentation)

20. **Abdel Salam, Mohamed S.**, Burk, R., (2004), Multiwalled Carbon Nanotubes as a Solid-Phase Extraction Adsorbent for PCB using GC-ECD, EnviroAnalysis Conference, May 16-21, 2004, Toronto, Ontario, Canada.
(Oral Presentation)
21. **Salam, Mohamed S.A.**, Guthrie, J.W., Murimboh, J., Chakrabarti, C.L., and Grégoire, D.C., (2003) Cadmium speciation in throughfall precipitation samples from Sudbury (Ontario) by Competing Ligand Exchange Method/Differential Pulse Anodic Stripping Voltammetry, IUPAC Congress and 86th Canadian Society for Chemistry Conference an Exhibition, August 10-15, 2003, Ottawa, Ontario, Canada. (Poster)
22. **Salam, Mohamed S.A.**, Wang, R., Guthrie, J.W Murimboh, J., Chakrabarti, C.L., and Grégoire, D.C., Speciation of cadmium in lake waters from Rouyn-Nornada, 49th International Conference on Analytical Science and Spectroscopy, June 1-4, 2003, Ottawa, Ontario, Canada. (Poster).
23. **Salam, Mohamed S.A.**, Wang, R., Guthrie, J.W Murimboh, J., Chakrabarti, C.L., and Grégoire, D.C., Speciation of cadmium in lake waters from Rouyn-Nornada, 2003 Metals In The Environment-Research Network (MITE-RN): Annual Research symposium, February 25-26, 2003, Ottawa, Ontario, Canada. (Poster).
24. **Salam, Mohamed S.A.**, Hassan, N.M., Jamaluddin, A., Raoufi, F Murimboh, J., Chakrabarti, C.L., and Grégoire, D.C., Speciation parameters of cadmium species in lake waters by the Competing Ligand Exchange Method using Square Wave Anodic Stripping Voltammetry, 2002 Metals In The Environment-Research Network (MITE-RN): Annual Research symposium, February, 2002, Ottawa, Ontario, Canada. (Poster).
25. **Salam, Mohamed S.A.**, Mandal, R., Chakrabarti, C.L., and Back, M.H. (2000). Effects of Competition between Trace Metals, Copper, Zinc and Lead, on Cadmium Complexation by Polyacrylic Acid and Laurentian Fulvic Acid studied by square wave Anodic Stripping Voltammetry, 46th International Conference on Analytical Science and Spectroscopy, August, 2000, Winnipeg, Manitoba, Canada, (Oral presentation).
26. **Salam, Mohamed S.A.**, Cello, V., Murimboh, J., Chakrabarti, C.L., Back, M.H., Grégoire, D.C., and W.H. Shroeder. (1999), Nickel speciation in freshwaters from Sudbury (Canada) mining area by Competitive Ligand Exchange Method/ Adsorptive Cathodic Stripping Voltammetry

(CLEM/AdCSV), The Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) annual meeting into conjunction with the 45th International Conference on Analytical Sciences and Spectroscopy (ICASS), Vancouver, Canada. (Oral presentation)

8. FUNDED PROJECTS:

1- Mohamed S.I. Makki, Magdy Y. Abdelaal, , Mohamed Abdel Salam, “Carbon Nanotubes- Modified Chitosan for different Applications” Project No. 3-107/429 funded by King Abdulaziz University, Deanship of Scientific Research.

2- Salih S. Al-Juaid, A.A. Hermas, Mohamed Abdel Salam, “Electrochemical Deposition of Carbon Nanotubes-Poly(o-phenylenediamine) Composite on the stainless steel surface”, Project No. 3-72/429 funded by King Abdulaziz University, Deanship of Scientific Research.

9. SCHOLARSHIPS AND OTHER AWARDS RECEIVED

Name	Location of Tenure	Period Held
<i>Awards for Scientific publication</i>	King Abdulaziz University	2009-2010
<i>Canadian Government Laboratory Visiting Fellow</i>	Health Canada	January 2007-Septemer 2007
<i>Fluorosense Inc. Scholarship in Chemistry</i>	Carleton University	September 2004- August 2005
<i>OGSST Scholarship</i>	Carleton University	September 2004- August 2005

10. TRAINING COURSES

Transportation and handling of Dangerous Goods certificate (TDG)
 Workplace Hazardous Materials Information System (WHMIS)
 Radiation Safety Protection Certificate
 CPR
 First Aid