

IBRAHIM H. A. BADR

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CURRICULUM VITA

PERSONAL:

- **Date of birth:** 12/1964
- **Nationality:** Egyptian
- **ORCID ID:** 0000-0003-1683-3827
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- **Google Scholar:** <http://is.gd/1tY1xN>
- **H-Index:** 21

EDUCATION:

- **Undergraduate Studies**
 - **B. Sc., 1986**, Excellent with honor degree, Ain-Shams University, Cairo Egypt.
- **Graduate Studies**
 - **Ph. D., 1996**, Analytical Chemistry, Ain-Shams University (Egypt)-The University of Michigan, Ann Arbor (joint supervision program).
 - **M. Sc., 1991**, Radiation Chemistry, Ain-Shams University, Cairo, Egypt.
- **Postdoctoral Studies**
 - **Postdoctoral Research Fellow** (6/1996-9/1996), Department of Chemistry, University of Michigan, Ann Arbor, USA
 - **Postdoctoral Research Fellow** (2/1997-4/1999), Department of Chemistry and Center of Membrane Science, University of Kentucky, Lexington, USA

PROFESSIONAL EXPERIENCE:

- **Chairman of the Chemistry Department**, Faculty of Science, Ain shams University, 8/2016-8/2019.
- **Chairman of the Inorganic and Analytical division**, Faculty of Science, Ain shams University, 9/2017-6/2018 and 8/2019-1/2020
- **Professor**, Chemistry Department, Faculty of Applied Science, Taibah University 8/2011-8/2013
- **Director of the Central Laboratory**, Ain-Shams University, 3/2009-8/2011
- **Professor**, Department of Chemistry, Faculty of Science, Ain-Shams University, 7/2007-present
- **Associate Professor**, Department of Chemistry, Faculty of Science, Ain-Shams University, 4/2002-7/2007
- **Assistant Professor**, Department of Chemistry, Faculty of Science, Ain Shams University, 3/1996-3/2002
- **Assistant Professor**, Department of Chemistry, Faculty of Science, United Arab Emirates University, 8/1999-8/2004
- **Visiting Professor**, Department of Chemistry, Faculty of Science, Qatar University, Doha, 8/2006-1/2007
- **Visiting Professor**, Department of Chemistry, University of Michigan, Ann Arbor 7/2004-8/2005

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- **Visiting Professor**, Department of Chemistry and Center of Membrane Science, University of Kentucky, Summers 2000, 2001, 2002, 2003, 2006
- **Postdoctoral Research Fellow**, Department of Chemistry, University of Kentucky, 2/1997-3/1999
- **Postdoctoral Research Fellow**, Department of Chemistry, University of Michigan, 6/1996-9/1996
- **Research Fellow**, Department of Chemistry, University of Michigan, 6/1993-9/1995
- **Assistant Lecturer**, Department of Chemistry, Faculty of Science, Ain Shams University, 1991-1993
- **Demonstrator**, Department of Chemistry, Faculty of Science, Ain Shams University, 1986-1991

RESEARCH INTERESTS:

- **Sensors bio-, and polyion sensors for environmentally and clinically relevant species:** development, response mechanism and applications
- **Membrane science:** biocompatibility, removal of pollutants and desalination.
- **Microfluidics and sensor arrays:** lab on CD, lab on chip, and screen printing.
- **Nano materials applications in analytical chemistry:** sensors, preconcentrating and removal.

FELLOWSHIPS AND SCIENTIFIC RECOGNITION:

- **An Egyptian government fellowship:** Offered to attend the University of Michigan Ann Arbor, USA. The fellowship was awarded to conduct graduate dissertation research through a collaborative program between Ain-Shams University and the University of Michigan. 1993-1995.
- **Marcuse Who's Who in Science and Engineering**, 2008.
- **2000 Outstanding Scientist**, 2008-2009.
- **Egyptian State Award in Advanced Technological Sciences** (جائزة الدولة التشجيعية في العلوم التكنولوجية), 2007.

MEMBERSHIP IN SCIENTIFIC SOCIETIES:

- Society of electroanalytical chemistry.
- American chemical society.
- Egyptian society of electrochemistry.

LIST OF PUBLICATIONS:

1. Elzawawy, F. M.; Saad, E. A.; **Badr, I. H. A.**; "Kinetics of chloride isotope exchange reaction between sodium chloride-36 and triphenyltin chloride in mixed solvents," *J. Radioanal. Nucl. Chem.*, **1992**, *162*, 71-78.
2. Elzawawy, F. M.; Saad, E. A.; **Badr, I. H. A.**; "Kinetics of chloride isotope exchange reaction between sodium chloride-36 and triphenyltin chloride in mixed solvents," *J. Radioanal. Nucl. Chem.*, **1992**, *164*, 141-151.
3. Hassan, S. S. M.; **Badr, I. H. A.**; "PVC membrane electrodes for manual and flow-injection determination of tetraphenylborate: applications to separate and sequential titrations of some metal ions," *Talanta*, **1994**, *41*, 522-530.

4. **Badr, I. H. A.**; Meyerhoff, M. E.; Hassan, S. S. M.; "Novel response mechanism and application of sulfite membrane electrode based on dithiocarbamate complexes of mercury(II)", *Anal. Chim. Acta*, **1995**, *310*, 211-221.
5. **Badr, I. H. A.**; Meyerhoff, M. E.; Hassan, S. S. M.; "Potentiometric anion selectivity of polymer membranes doped with palladium organophosphine complex", *Anal. Chem.*, **1995**, *67*, 2613-2618.
6. **Badr, I. H. A.**; Meyerhoff, M. E.; Hassan, S. S. M.; "Metalloporphyrin-based polymer membrane electrode with high selectivity for 2-hydroxybenzhydroxamate", *Anal. Chim. Acta*, **1996**, *321*, 11-19.
7. **Badr, I. H. A.**; Rammamurthy, N.; Yang, V. C.; Meyerhoff, M. E.; "Assay of protease inhibitors using polycation sensitive membrane electrode", *Anal. Biochem.* **1997**, *250*, 74-81.
8. Xia, Z; **Badr, I. H. A.**; Plummer, S. L.; Cullen, L.; Bachas, L. G.; "Synthesis and evaluation of a bis(crown ether) ionophore with a conformationally constrained bridge in ion-selective electrodes", *Anal. Sci.*, **1998**, *14*, 169-173.
9. Shetty, R. S.; Ramanathan, S.; **Badr, I. H. A.**; Wolford, J. L.; Daunert, S.; "Green fluorescent protein in the design of a living biosensing system for L-arabinose", *Anal. Chem.*, **1999**, *71*, 763-768.
10. **Badr, I. H. A.**; Plata, A.; Molina, P.; Alajarin, M.; Vidal, A.; Bachas, L. G.; "Hydrogen sulfite optical sensor based on lipophilic guanidinium ionophore", *Anal. Chim. Acta*, **1999**, *388*, 63-69.
11. **Badr, I. H. A.**; Diaz, M.; Hawthorne, M. F.; Bachas, L. G.; "Mercuracarborand 'anti-crown ether' based chloride sensitive liquid/polymeric membrane electrodes," *Anal. Chem.*, **1999**, *71*, 1371-1377.
12. Berrocal, M.; Cruz, A, D.; **Badr, I. H. A.**; Bachas, L. G.; "Tripodal ionophore with sulfate recognition properties for anion-selective electrodes", *Anal. Chem.*, **2000**, *72*, 5295-5299.
13. Hassan, S. S. M.; Marei, S. A.; **Badr, I. H. A.**; Arida, H. A.; "Epoxy matrix membrane potentiometric sensor based on zirconium titanium phosphate ion-exchanger for flow injection analysis of nitrite", *Electroanalysis*, **2000**, *12*, 1312-1317.
14. **Badr, I. H. A.**; Hestekin, J. A.; Bhattacharyya, D.; Bachas, L. G.; "Electrochemical assay of polyamino acids: application to polyamino acid functionalized membranes", *Electroanalysis*, **2000**, *12*, 1368-1372.
15. **Badr, I. H. A.**; Johnson, R.D.; Diaz, M.; Hawthorne, M. F.; Bachas, L. G.; "A selective optical sensors based in [9]mercuracarborand-3, a new type of ionophore with a chloride complexing cavity", *Anal. Chem.*, **2000**, *72*, 4249-4254.
16. **Badr, I. H. A.**; "Nitrite-selective optical sensors based on organopalladium ionophores", *Anal. Lett.*, **2001**, *34*, 2019-2034.
17. Hassan, S. S. M.; Marei, S. A.; **Badr, I. H. A.**; Arida, H. A.; "Flow injection analysis of sulfite ion with a potentiometric titanium phosphate-epoxy based membrane sensor", *Talanta*, **2001**, *54*, 773-782.
18. Hassan, S. S. M.; Marei, S. A.; **Badr, I. H. A.**; Arida, H. A.; "Novel solid-state ammonium ion potentiometric sensor based on zirconium titanium phosphate ion exchanger", *Anal. Chim. Acta*, **2001**, *427*, 21-28.
19. Johnson, R. D.; **Badr, I. H. A.**; Barrett, G.; Lai, S.; Lu, Y.; Madou, M. J.; Bachas, L. G.; "Development of a fully integrated analysis system for ions based on ion-selective optodes and centrifugal microfluidics", *Anal. Chem.*, **2001**, *73*, 3940-3946.
20. Berrocal, M. J.; **Badr, I. H. A.**; Gao, D.; Bachas, L. G.; "Reducing the thrombogenicity of ion-selective electrode membranes through the use of a silicone-modified segmented polyurethane", *Anal. Chem.*, **2001**, *73*, 5328-5333.

21. Hassan, S. S. M.; Meyerhoff, M. E.; **Badr, I. H. A.**; Abd-Rabboh, H. S. M.; "Determination of carrageenan in food products using potentiometric polyion sensors", *Electroanalysis*, **2002**, *6*, 439-444.
22. Johnson, R. D.; Pinchart, A; **Badr, I. H. A.**; Gingras, M; Bachas, L. G.; "Polymeric membrane ion-selective electrodes based on molecular asterisk ionophores", *Electroanalysis*, **2002**, *14*, 1419-1425.
23. **Badr, I. H. A.**; Johnson, R. D.; Madou, M. J.; Bachas, L. G.; "Fluorescent ion-selective optode membranes incorporated onto a centrifugal microfluidics platform", *Anal. Chem.*, **2002**, *74*, 5569-5575.
24. Berrocal, M.; Johnson, R. D.; **Badr, I. H. A.**; Johnson, R. D.; Bachas, L. G.; "Improving the blood compatibility of ion-selective electrodes by employing Poly(MPC-co-BMA), a copolymer containing phosphorylcholine", *Anal. Chem.*, **2002**, *74*, 3644-3648.
25. Johnson, R. D.; **Badr, I. H. A.**; Diaz, M.; Wedge, T.; Hawthorne, M. F.; Bachas, L.G.; "Electronic effects on the selectivity of mercuracarborand ionophores in ion-selective electrodes and membrane formulations for their use in high protein concentration environments", *Electroanalysis*, **2003**, *15*, 1-7.
26. Hassan, S. S. M.; **Badr, I. H. A.**; Abd-Rabboh, H. S. M.; "Potentiometric flow injection analysis of anionic surfactants in industrial products and wastes ", *Microchimica Acta*, **2004**, *144*, 263-269.
27. **Badr, I. H. A.**; Feiler, J.; Bachas, L.G.; "Response behavior of sodium-selective electrodes modified by surface attachment of the anticoagulant polysaccharides heparin and chondroitin sulfate", *Talanta*, **2005**, *65*, 261-266.
28. **Badr, I. H. A.**; " Silver ion-selective membrane electrodes based on bis(thiothiazole) derivative: Optimization and Practical Applications", *Microchimica Acta*, **2005**, *149*, 87-94.
29. **Badr, I. H. A.**; Meyerhoff, M. E.; "Highly selective optical fluoride ion sensor with submicromolar detection limit based on aluminum(III) octaethylporphyrin in thin polymeric film" *J. Am. Chem. Soc.*, **2005**, *127*, 5318-5319.
30. **Badr, I. H. A.**; Meyerhoff, M. E.; "Highly selective single-use fluoride ion optical sensor based on aluminum(III)-salen complex in thin polymeric film" *Anal. Chim. Acta*, **2005**, *553*, 169-176.
31. **Badr, I. H. A.**; Meyerhoff, M. E.; "Fluoride optical sensors based on aluminum(III)-octaethyl porphyrin: further characterization and practical application", *Anal. Chem.*, **2005**, *77*, 6719-6728.
32. **Badr, I. H. A.**; "Potentiometric anion selectivity membrane electrodes based on salen complexes of and Co(III), Cr(III), and Al(III)" *Anal. Chim. Acta*, **2006**, *570*, 176-185.
33. **Badr, I. H. A.**; "Development of a portable, low cost, solid state optical instrument for environmental monitoring of heavy metal ions: preparation and characterization of light emitting diode based optical chemical sensors "LEDOCS"" *UAEU Funded Research Publications*, **2006**, *24*(2), 237-243.
34. Hassan, S. S. M.; **Badr, I. H. A.**; Kamel, A. H.; Mohamed, M. S.; "A novel poly(vinyl chloride) matrix membrane sensor for batch and flow-injection determinations of thiocyanate, cyanide and some metal ions", *Anal. Sci.*, **2009**, *25*, 911-918.
35. Saleh, G. A.; **Badr, I. H. A.**; Derayea, S. M.; Nour El-Deen, D. A. M.; " Batch and flow injection potentiometric monitoring of ceftriaxone sodium in pharmaceutical preparations using two novel membrane sensors " *Bulletin of Pharmaceutical Sciences*, **2012**, *35*, 199-214
36. Aziz, A. A. A.; **Badr, I. H. A.**; El-Sayed, I. S. A.; " Synthesis, spectroscopic, photoluminescence properties and biological evaluation of novel Zn(II), and Al(III) complexes of NOON tetradentate Schiff bases", *Spectrochimica Acta* **2012**, *96*, 388-396.

37. **Badr, I. H. A.**; Zidan, W. I.; Akl, A. F.; " A novel neutral carrier for uranyl ion based on a commercially available aminophosphate derivative: evaluation in membrane electrodes and nuclear safeguards applications", *Electroanalysis*, **2012**, 24, 2309–2316.
38. **Badr, I. H. A.**; El-Sayed, H. M.; Abdel Al, H.; Hegab, M. S.; "Clinical Utility of Serum Glycodelin as a Novel Marker for Ovarian Cancer", *Life Science Journal*, **2013**, 10(3), 664-670
39. Hassan, S. S. M.; **Badr, I. H. A.**; Kamel, A. H.; Mohamed, M. S.; "New Potentiometric Sensors for Picrate Determination Using Flow-Through System: Application to Kinetic Assessment of Se(IV)" *Electroanalysis*, **2013**, 25, 793-801.
40. **Badr, I. H. A.**; Zidan, W. I.; Akl, A. F.; " Cyanex Based Uranyl Sensitive Polymeric Membrane Electrodes ", *Talanta*, **2014**, 118, 147-155.
41. **Badr, I. H. A.**; Gouda, M.; Abdel-Sattar, R.; Sayour, H. E.; "Reduction of Thrombogenicity of PVC-Based Sodium Selective Membrane Electrodes Using Heparin-Modified Chitosan" *Carb. Polym.*, **2014**, 99, 783-790.
42. **Badr, I. H. A.**; Saleh, G. A.; Sayed, S. M.; Nour El-Deen, D. A. M.; " A novel membrane sensor for batch and flow injection potentiometric determination of Cefazolin Sodium in pharmaceutical preparations " *Inter. J Electroanal. Sci.*, **2014**, 9, 1621-1636.
43. Saed, D.; Nasar, H.; El-Gendy, N.; Zaki, T.; Mostafa, Y.; **Badr, I. H. A.**; "Enhancement of pyrene biodegradation by assembling MFe₃O₄ nano-sorbents on the surface of microbial cells" *Energy Sources, Part A*, **2014**, 36, 931-1937.
44. **Badr, I. H. A.**; Abo Bakr, K.; Mahdy, T.; "Preparation and application of a novel nanocomposites membrane for extracting the primary metabolite of cannabis in urine" *Current Science International*, **2014**, 3, 390-402.
45. Zidan, W. I.; **Badr, I. H. A.**; Akl, A. F.; "Development of potentiometric sensors for the selective determination of UO₂²⁺ ions" *J. Radioanal. Nucl. Chem.*, **2015**, 303, 469-477.
46. Keshk, S. M. A. S.; Hamdy, M. S.; **Badr, I. H. A.**; "Physicochemical Characterization of Mercerized Cellulose/TiO₂ Nano-Composite" *Am. J. Poly. Sc.*, **2015**, 5, 24-29.
47. **Badr, I. H. A.**; Abdel-Sattar, R.; Keshk, S. M. A. S.; "Enhancing biocompatibility of some cation selective electrodes using heparin modified bacterial cellulose" *Carb. Polym.*, **2015**, 134, 687-694
48. El-Sabagh, S. M.; El-Naggar, A. Y.; El Nady, M. M.; Badr, I. H. A.; Rashad, A. M., Ebiad M. A.; Abdullah, E. S.; "Bulk geochemical characteristics of crude oils from gulf of suez, Egypt" *Int. J. Curr. Res.*, **2015**, 7, 20574-20580.
49. Abdel-Haleem, F. M.; **Badr, I. H. A.**; Rizk, M. S.; " Potentiometric Anion Selectivity and Analytical Applications of Polymer Membrane Electrodes Based on Novel Mn(III)- and Mn(IV)-Salophen Complexes" *Electroanalysis*, **2016**, 28, 2911-2929.
50. Abdel-Haleem, F. M.; Rizk, M. S.; **Badr, I. H. A.**; "Potentiometric Determination of Ciprofloxacin in Physiological Fluids Using Carbon Paste and Nano-Composite Carbon Paste Electrodes" *Electroanalysis*, **2017**, 29, 1172–1179.
51. El-Sabagh, S. M.; Ebiad M. A.; Rashad, A. M.; El-Naggar, A. Y.; Badr, I. H. A.; El Nady, M. M.; Abdullah, E. S.; " Characterization based on biomarker distribution of some crude oils in Gulf of Suez area – Egypt" *J. Mater. Environ. Sci.*, **2017**, 8, 3433-3447.
52. El-Sabagh, S. M.; Rashed, A. M.; El-Naggar, A. Y.; El Nady, M. M.; **Badr, I. H. A.**; Ebiad M. A.; Abdullah, E. S.; "API gravities, vanadium, nickel, sulfur, and their relation to gross composition: Implications for the origin and maturation of crude oils in Western Desert, Egypt" *Petrol. Sci. Tech.*, **2017** 35, 1428.
53. Zahran, E.; Paeng, K.-J.; **Badr, I. H. A.**; Hume, D.; Lynn, C. L.; Johnson, R. D.; Bachas, L. G.; " Correlating the potentiometric selectivity of cyclosporin-based electrodes with binding

- patterns obtained from electrospray ionization-mass spectrometry" *Analyst*, **2017**, 142, 3241-3249.
54. **Badr, I. H. A.**; Hassan, H. H.; Hamed, E.; Abdel-Aziz, A. M. " Sensitive and Green Method for Determination of Chemical Oxygen Demand Using a Nano-copper Based Electrochemical Sensor" *Electroanalysis*, **2017**, 29, 2401-2409.
 55. El-Sabagh, S. M.; El-Naggar, A. Y.; El Nady, M. M.; Badr, I. H. A.; Ebiad M. A.; Abdullah, E. S.; " Fingerprinting of biomarker characteristics of some Egyptian crude oils in Northern Western Desert as evidence for organic matter input and maturity level assessment" *Egypt. J. Petrol.*, **2018**, 27, 201-208.
 56. Hassan, H. H.; **Badr, I. H. A.**; Abdel-Fatah, H. T. M.; Elfeky, E. M. S.; Abdel-Aziz, A. M.; " Low cost chemical oxygen demand sensor based on electrodeposited nano-copper film" *Arab J. Chem.*, **2018**, 11, 171-180.
 57. Abdel-Aziz, A.M.; Hassan, H.H.; Hassan, A.A.; **Badr, I.H.A.**; " A sensitive and green method for determination of catechol using multi-walled carbon nanotubes/poly(1,5-diaminonaphthalene) composite film modified glassy carbon electrode" *J Electrochem. Soc.*, **2019**, 166, B1441-B1451.
 58. Mabrouk, M.M.; Noureldin, H.A.M.; **Badr, I.H.A.**; Saad, A.H.K.; " Simple spectrofluorimetric methods for determination of veterinary antibiotic drug (apramycin sulfate) in pharmaceutical preparations and milk samples " *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, **2020**, 224, 117395.
 59. Abdel-Aziz, A.M.; Hassan, H.H.; Hassan, A.A.; **Badr, I.H.A.**; " Glassy Carbon Electrode Electromodification in the Presence of Organic Monomers: Electropolymerization versus Activation " *Anal. Chem.*, **2020**, 92, 7947-7954.
 60. Saleh, G.A., **Badr, I.H.A.**, Nour El-Deen, D.A.M., Derayea, S.M. "Novel Potentiometric Sensor for the Selective Determination of Cefotaxime Sodium and Its Application to Pharmaceutical Analysis" *IEEE Sensors Journal*, **2020**, 20, 3415-3422.
 61. Rafea, O.A.S., Salem, A.N.M., **Badr, I.H.A.** "Preparation and characterization of high chemical durability and low thermal expansion borosilicate glass-ceramic composites by recycling of borosilicate glass" *Egyptian Journal of Chemistry*, 2021, 64, 2193-2199

PATENTS:

1. Bachas, L. G.; Hawthorne, M. F.; **Badr, I. H. A.**; "Ion-Selective Membrane Sensors with Mercuracarborand Ionophore", U.S. (**1999**), US 5985117 A 19991116.
2. Meyerhoff, M. E.; **Badr, I. H. A.**; "Films for Detecting Fluoride" U.S. (**2009**) US 7622075 B2 20091124.

PAPERS PRESENTED AT PROFESSIONAL MEETINGS:

1. "Novel potentiometric nitrite sensor based on Pd(II)organophosphine complexes", **Badr, I. H. A.**; Meyerhoff, M. E., *FACSS meeting*, **1994**, St. Louis, Missouri.
2. "Response mechanism of nitrite responsive membrane electrodes based on Co(III)tetraphenylporphyrins", Malinowska, E.; **Badr, I. H. A.**; Meyerhoff, M. E., *PITTCO95* **1995**, New Orleans, Louisiana.
3. "Mixed complexation mechanisms of ionophores in ion-selective electrode polymeric membranes", Schaller, U.; Steinle, E. D.; **Badr, I. H. A.**; Meyerhoff, M. E.; Pretsch, E., *PITTCO96*, **1996**, Chicago, Illinois.

4. "Metalloporphyrin-based polymer membrane electrode with high selectivity for 2-hydroxybenzhydroxamate", **Badr, I. H. A.**; Meyerhoff, M. E.; Hassan, S. S. M., *Electrochemistry Conference, 1996*, Luxer, Egypt,
5. "Application of electrochemical polyion sensors in heparin monitoring and for proteases and protease inhibitors", Dror, M.; Ramamurthy, N.; **Badr, I. H. A.**; Meyerhoff, M. E.; Yang, V., *Oak Ridge Conference, 1997*, St. Louis, Missouri.
6. "Hydrogen sulfite optical sensor based on lipophilic guanidinium compounds", Plata, A.; **Badr, I. H. A.**; Bachas, L. G., *ACS Meeting, 1998*, Dallas, Texas.
7. "Electrochemical assay of carrageenan in food products utilizing polyion sensors", **Badr, I. H. A.**; Sallah, H.; Hassan, S. S. M.; Meyerhoff, M. E., *PITTCO, 1998*, New Orleans, Louisiana.
8. "Immobilization of sensor components for improved stability and biocompatibility", **Badr, I. H. A.**; Xia, Z.; Mowery, K.; Wang, J.; Bachas, L. G., *Workshop on Biomedical sensing: Understanding the Sensor-Tissue Interface, 1998*, Dallas, Texas.
9. "Development of a hydrogen sulfite optode based on a guanidinium ionophore", Plata, A.; **Badr, I. H. A.**; Bachas, L. G., *PITTCO98, 1998*, New Orleans, Louisiana.
10. "Evaluation of a new bis(crown-ether) ionophore with a conformationally constrained bridge in ion-selective electrodes", Xia, Z.; **Badr, I. H. A.**; Plummer, S. L.; Cullen, L.; Bachas, L. G., *ACS Meeting, 1998*, Dallas, Texas.
11. "Chloride optical sensor based on mercuracarborand ionophore", **Badr, I. H. A.**; Bachas, L. G., *PITTCO'99, March 8, 1999*, Orlando, Florida.
12. "Mercuracarborand based liquid/polymeric membrane electrodes", Johnson, R. D.; **Badr, I. H. A.**; McGlory, N. M.; Bachas, L. G., *PITTCO'99, March 9, 1999*, Orlando, Florida.
13. "Potentiometric and thrombogenic properties of ion-selective electrode membranes based on segmented polyurethane with silicone-modifying end groups", Berrocal, M. J.; **Badr, I. H. A.**; Bachas, L. G., *PITTCO'99, March 10, 1999*, Orlando, Florida.
14. "Molecular asterisks as recognition elements for sensors", Johnson, R. D.; **Badr, I. H. A.**; Gingras, M.; Bachas, L. G., *217th ACS National Meeting, March 21, 1999*, Anaheim, CA.
15. "Design of recognition elements for environmental ion sensors", Bachas, L. G.; **Badr, I. H. A.**; Ball, J. C.; Berrocal, M. J.; Johnson, R. D., *217th ACS National Meeting, March 25, 1999*, Anaheim, CA.
16. "Strategies for improved biocompatibility of ion-selective electrode membranes", Berrocal, M. J.; **Badr, I. H. A.**; Bachas, L. G., *219th ACS National Meeting, March 26, 2000*, San Francisco, CA.
17. "Biologically inspired recognition chemistry for sensors", Bachas, L. G.; **Badr, I. H. A.**; Berrocal, M. J.; Johnson, R. D.; Paeng, K., *32nd ACS Central Regional Meeting, May 17, 2000*, Covington, KY.
18. "New polymeric materials to improve the biocompatibility of ion-selective electrode membranes", Berrocal, M. J.; **Badr, I. H. A.**; Bachas, L. G., *32nd ACS Central Regional Meeting, May 17, 2000*, Covington, KY.
19. "Rational and biomimetic design of recognition elements for ion-selective electrodes and optodes", Johnson, R. D.; **Badr, I. H. A.**; Ball, J. C.; Berrocal, M. J.; Willis, P.; Cammers-Goodwin, A.; Bachas, L. G., *2000 International Chemical Congress of Pacific Basin Societies, December 17, 2000*, Honolulu, HI.
20. "Biologically-Inspired Strategies in the Design of Ionophores for Ion Sensors," Bachas, L. G.; **Badr, I. H. A.**; Berrocal, M. J.; Johnson, R. D.; Paeng, K., *International Congress on Analytical Sciences, 2001*, Tokyo, Japan.
21. "Towards Measuring an Array of Ions with a Centrifugal Analysis Platform," Johnson, R. D.; **Badr, I. H. A.**; Lai, S.; Madou, M. J.; Bachas, L. G., *International Congress on Analytical Sciences, Tokyo, 2001*, Japan.

22. "Fluorescence-based optical sensors integrated in a centrifugal microfluidics platform", **Badr, I. H. A.**; Johnson, R. D.; Barrett, G.; Lai, S.; Madou, M. J.; Bachas, L. G., *PITTCON'2001*, **March 8, 2001**, New Orleans, LA.
23. "Ion analysis via centrifugal microfluidics and optode arrays", Johnson, R. D.; Marathe, V.; **Badr, I. H. A.**; Lai, S.; Madou, M. J.; Bachas, L. G., *2nd BioMEMS and Biomedical Nanotechnology World*, **2001**, Columbus, OH.
24. "Development of environmental chemical sensors for continuous monitoring of heavy metal ions and environmental pollutants", **Badr, I. H. A.**, *2nd UAEU Annual Research Conference*, **2001**, Al-Ain, UAE.
25. "Optical and Potentiometric sensors based on organopalladium ionophores", **Badr, I. H. A.**, *Jordon International Conference of Chemistry*, 2002, Jordon, Irbid.
26. "Rational and Biomimetic Design of Ionophores for Sensors and Integration Into Microfluidic Systems", Bachas, L. G.; **Badr, I. H. A.**; Johnson, R. D., *Mátrafüred 02 international Conference on Electrochemical Sensors*, 2002, Mátrafüred, Hungary.
27. "Development of Ion Analysis System by Integration of Fluorescent Optical Sensor, Laser Diode Excitation and Centrifugal Microfluidics ", **Badr, I. H. A.**; Johnson, R. D.; Bachas, L. G. *International Congress of Spectroscopy*, 2003, Kingdom of Morocco, Marrakech.
28. "Development of environmental chemical sensors for continuous monitoring of heavy metal ions and environmental pollutants: Further characterization and practical applications", **Badr, I. H. A.**, *4th UAEU Annual Research Conference*, **2004**, Al-Ain, UAE.
29. "Development of a portable, low cost, solid state optical instrument for environmental monitoring: preparation and characterization of light emitting diode based optical chemical sensors "LEDOCS" (Phase-I)", **Badr, I. H. A.**, *4th UAEU Annual Research Conference*, **2004**, Al-Ain, UAE.
30. "Molecular asterisks with persulfurated aromatic cores" Schnaebeler, N.; Raimundo, J.-M.; Gingras, M.; Pinchart, A.; Dallaire, C.; Levillain, E.; Mallah, T.; Bacchas, L.G.; Johnson, D. R.; **Badr, I. H. A.**, 8th European Conference on Molecular Electronics, **2005**, Bologna, Italy.
31. "Potentiometric and optical fluoride selective sensors based on group-13 metalloporphyrin and salophen complexes", Michell-Koch, J.; **Badr, I. H. A.**, Wong, C.; Malinowska, E; Groski, L; Meyerhoff, M. E. *PITTCON 2005*, Orlando, Florida.
32. "Fluoride Selective Electrochemical And Optical Sensors Based On Ga(III), Zr(IV) and Al(III) Porphyrins/Salophens In Thin Polymeric Films" Meyerhoff, M. E.; **Badr, I. H. A.**; Malinowska, E.; Mitchell-Koch, J.; Gorski, L.; Kang, Y. *PACIFICHEM 2005*, Honolulu, Hawaii.
33. "Potentiometric and Optical Fluoride Selective Sensors Based lipophilic aluminum complexes Metalloporphyrin and Salophen Complexes", **Badr, I. H. A.**, Michell-Koch, J.; Malinowska, E; Groski, L; Meyerhoff, M. E., *PITTCON 2006*, Orlando, Florida.
34. "Alkyl Naphthalene and Phenanthrene as Maturity Indicators of Some Egyptian Crude Oils", Abdullah, E. S.; Al-Sabbagh, S. M.; El-Naggar, A. Y.; **Badr, I. H. A.**; El Nady, M. M.; Ebiad M. A.; Rashad; A. M., International Conference on Environmental Science and Technology-Cappadocia, **2013** Ürgüp, NEVSEH R, TURKEY.
35. "Alkyl Naphthalene and Phenanthrene as Maturity Indicators of Some Egyptian Crude Oils", Abdullah, E. S.; Al-Sabbagh, S. M.; El-Naggar, A. Y.; **Badr, I. H. A.**; El Nady, M. M.; Ebiad M. A.; Rashad; A. M., International conference on environmental science and technology-cappadocia, **2013** Urgüp, Turkey.
36. "Maturity Assessment of Some Egyptian Crude Oils Based On the Distribution of Saturate Biomarkers" Al-Sabbagh, S. M.; El-Naggar, A. Y.; El Nady, M. M.; **Badr, I. H. A.**; Ebaid M. A.; Abdullah, E. S. The 17th international conference of Petroleum Mineral Resources and Development, 2014, Egypt.

37. "Microwave Assisted Synthesis of Cellulose-Supported Metal-Oxide Nanoparticles" Keshk , S. M. A. S.; Abd-Rabboh, H. S. M.; **Badr, I. H. A.**, International Conference on Advances in Composite Materials and Structures, **2015**, Istanbul, Turkey.

PAPERS PUBLISHED IN LOCAL JOURNALS:

1. **Badr, I. H. A.**; "Environmental chemical sensors for continuous monitoring of heavy metal ions and gaseous pollutants: further characterization and environmental applications" *UAEU Funded Research Publications* **2006**, 24, 228-236.
2. **Badr, I. H. B.**; Keshk, S.; Abdel-Sattar, R.; Sayour, H. E. M., Attia, M. S.; "Enhancing biocompatibility of calcium-ion selective electrodes using bacterial cellulose and heparin-modified bacterial cellulose biocompatible polymers" *J. Sci. Res. Sc.*, **2011**, 28, pp
3. **Badr, I. H. A.**; El-Sayed, I. S. A.; Abdel Aziz, A. A. "Synthesis, spectroscopic and biological evaluation of novel Zn(II) and Al(III) complexes of NOON tetradentate Schiff bases" *J. Sci. Res. Sc.*, **2011**, 28, 380-397.
4. **Badr, I. H. A.**; Ahmed, M.A., Soliman, A. A. A.; Mohammed M. N.; "Carrier-based membrane electrodes for copper ion based on LIX 622N: characterization and application" *J. Sci. Res. Sc.*, **2011**, 28, pp.
5. **Badr, I. H. A.**; Zidan, W. I.; Akl, Z. F.; "Novel Schiff bases as uranyl(II) selective ionophores in polymeric membrane electrodes" *J. Sci. Res. Sc.*, **2012**, 29, pp.
6. **Badr, I. H. A.**; Hassan, H. H.; Hamed, E., Abdel-Aziz, A. M.; "A sensitive and green method for determination of chemical oxygen demand using a nano-copper electrochemical sensor" *J. Sci. Res. Sc.*, **2012**, 29, pp.
7. Ahmed, M. A.; **Badr, I. H. A.**; Abo-Zeid, S. M.; El-Nasser, E. H. A. "Optical thiocyanate selective sensor based on manganese (III)-salen complex in a polymeric film" *J. Sci. Res. Sc.*, **2012**, 29, pp.
8. Ahmed, M. A.; **Badr, I. H. A.**; Abo-Zeid, S. M.; El-Nasser, E. H. A "Hydrogen sulfite potentiometric membrane sensors based on lipophilic guanidinium ionophore" *J. Sci. Res. Sc.*, **2013**, 30, pp.
9. **Badr, I. H. A.**; Salim, A; Salem, A. M.; Gouda, M.; Sayour, H. E. M. " Enhancing the biocompatibility of sodium membrane electrodes by using chitosan-CuO and chitosan-CuO-heparin composite membranes" *J. Sci. Res. Sc.*, **2017**, 34, 399-418.
10. Salem, E.; Hassan, H. H.; **Badr, I. H. A.**; "Selective determination of dopamine by novel electrochemical sensors based on nickel nano particles" *J. Sci. Res. Sc.*, **2018**, 35, 142-160.

PAST AND PENDING GRANTS:

1. **Badr, I. H. A.**; Ramadan, S. M; "Environmental chemical sensors for continuous monitoring of heavy metal ions and gaseous pollutants", UAEU research council, 2000-2001. **Fund: 15000 Dhs**
2. **Badr, I. H. A.**; "Environmental chemical sensors for continuous monitoring of heavy metal ions and gaseous pollutants: further characterization and environmental applications", UAEU research council, 2001-2002. **Fund: 14000 Dhs**
3. **Badr, I. H. A.**; "Development of a portable, low cost, solid state optical instrument for environmental monitoring of heavy metal ions: preparation and characterization of light emitting diode based optical chemical sensors "LEDOCS" ", UAEU research council, 2002-2003. **Fund: 50000 Dhs**
4. **Badr, I. H. A.**; "Development of and chemical sensors for environmental and clinical monitoring" Ain Shams University Scientific Research Sector, 2009-2011. **Fund: 10000 LE**

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5. Hassan, H. H. H.; **Badr, I. H. A.**; "Preparation of nano materials and their applications in chemical sensors of and chemical sensors" ASU Scientific Research Sector, 2011-2013. **Fund: 9000 LE**
6. **Badr, I. H. A.**; " Chemical sensors based on nano-materials and conventional polymers for Environmental and Clinical Monitoring " Environmental Affairs Sector of Ain Sham University (EAS-FUND 18-19). 2017-2019. **Fund: 20000 LE**
7. Keshk, S.; **Badr, I. H. A.**; Aboul-Wafa, S.; "Novel Synthesis of Starch/Cellulose Composites from Agro-Industrial Wastes and Their Industrial, Clinical and Environmental Applications" KACST, AT 35-95, **2014-2015. Fund: 1 million SR**
8. **Badr, I. H. A.**; Abdelhameed, R. M.; Akl, Z.; Abdel-Aziz, A. M. "Development of novel nano-material-based composites and membranes for sensing, and removal water pollutants" STDF, Basic Science, **2021. Fund: 1.9 million LE**
9. Mohamed, E. F.; **Badr, I. H. A.** "Novel Nanomaterials-Based Methods for Preconcentration and Assay of Some Rare Earth Elements and their Applications in real water samples" STDF, Graduate fund, **2021. Fund: 0.2 million LE**
Total fund: 7.1 million LE

SUPERVISION OF M.Sc. AND Ph.D. DISSERTATIONS:

Supervised over 25 M.Sc. and Ph.D. dissertations.

SELECTED COMMITTEES:

1. Quality assurance and accreditation in chemistry.
2. Committee for development of biochemistry track in chemistry department.
3. Teaching and learning development committee
4. Academic planning committee
5. Self-assessment committee
6. Curriculum development committee
7. Committee for the development of a curriculum for chemistry laboratories
8. Laboratory safety committee
9. Research Projects Committee
10. Committee for the supervision and development of the research and teaching laboratories.
11. Social activities and seminars committee
12. Committee for preparing an annual departmental report
13. Practical training committee
14. Committee for nomination of new faculty members
15. Schedules committee
16. Seminar committee
17. Self-Study Committee
18. Conferences and workshops committee

E-LEARNING AND COMPUTER EXPERIENCE:

- E-learning: Web-CT, Blackboard, Macromedia Director 7, Microsoftteams, Moodle...etc.
- Languages: C, Maple, HTML,...etc.
- Chemistry Software: ChemOffice, Hyperchem,... etc.

COURSES TAUGHT:

- **Ain Shams University**
- 1. Spectrochemical methods of analysis for M.Sc. students

2. Electrochemistry for M.Sc. students
 3. Electroanalytical chemistry for M.Sc. students
 4. Instrumental analysis
 5. Spectrochemical methods for applied chemistry students
 6. Separation methods for applied chemistry students
 7. Spectrochemical methods for double major students
 8. Teaching and supervision of different analytical and general chemistry laboratory courses offered by the department (e.g., analytical, instrumental, and general chemistry labs)
- **United Arab Emirates University:**
 1. Analytical chemistry
 2. Analytical chemistry for non-major
 3. General chemistry I
 4. Instrumental analysis
 5. Industrial analysis
 6. Analytical biochemistry (Selected topics)
 7. Advanced chromatographic techniques (Selected topics)
 8. Integrated studies in chemistry (Capstone Course)
 9. Research project I
 10. Research project II
 11. Instrumental analysis for M.Sc. program in environmental science
 12. Environmental chemistry for M.Sc. program in environmental science
 - **Qatar University**
 1. General chemistry
 2. General chemistry laboratory
 3. Analytical chemistry laboratory
 - **University of Kentucky:**
 1. Fundamentals of analytical chemistry (co-teaching)
 - **Taibah University:**
 1. Analytical chemistry
 2. General chemistry I
 3. General chemistry for engineering students
 4. General chemistry II
 5. Spectrochemical analysis
 6. Chromatography and its industrial applications
 7. Analytical chemistry laboratory.
 8. Instrumental analysis laboratory
 9. Chromatography laboratory
 - **Galala University:**
 1. Analytical chemistry-I for pharmacy students.

SELECTED SHORT COURSES TAUGHT:

1. Chemical Sensors and Biosensors: Fundamentals and applications.
2. Chemical Sensors and Biosensors: Recent Trends, Medical and Environmental Applications.
3. Analysis of Inorganic and Organic Species of Environmental Relevance.
4. Determination of Air and Water Pollutants.
5. Air Quality Control.
6. Accreditation of Analytical Laboratories.
7. Optical Chemical Sensors: How and Why?
8. Contemporary Chromatographic Methods.
9. Recent Advances in GC
10. Hyphenated Techniques
11. Electrochemical Analysis
12. Atomic Spectrometry

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13. Molecular Spectrometry
14. Modern Analytical Techniques for Environmental and Industrial Monitoring
15. Introduction to Instrumental analysis
16. Chemistry in our live for non-chemists
17. Flow Injection Analysis: Theory and Practice
18. Statistics in Analytical Chemistry
19. Analytical Biochemistry
20. Analysis of Water and Wastewater

SPECIAL TRAINING:

1. Credit hours system (21 hr., Ain Shams University).
2. Course design (21 hr., Ain Shams University).
3. Technology in teaching (21 hr., Ain Shams University).
4. Quality assurance and accreditation (18 hr., Ain Shams University).
5. Total quality management (18 hr., Ain Shams University).
6. Intensive workshops on quality assurance in education and accreditation (4 weeks, National Authority for Quality Assurance and Accreditation of Education)
7. Marketing and funding of scientific research (21 hr., Ain Shams University).
8. Teaching evaluation (18 hr., Ain Shams University).
9. Effective management of meetings (18 hr., Ain Shams University).
10. New faculty training program (60 hr., Ain Shams University).
11. Using Web-CT for course management (6 hr, UAE University).
12. Blackboard as a course management tool (6 hr, UAE University).
13. Fire extinguisher program (3 hr, University of Kentucky).
14. Hazardous waste generator program (3 hr, University of Kentucky).
15. Chemical hygiene plan (lab safety) training program (2 hr, University of Kentucky).

INSTRUMENTATION:

- **Excellent experience with the following instruments:**
 1. Optical Methods: UV, VIS, IR, FTIR, NMR, FAAS, and GFAAS.
 2. Various electrochemical instruments.
- **Good experience with the following instruments:**
 1. Chromatographic Methods: GC, HPLC, Hyphenated-chromatographic methods, and capillary electrophoresis
 2. Morphology and Surface Analysis: SEM, XPS.

INTERNATIONAL AND NATIONAL COLLABORATORS

INTERNATIONAL:

- Mark E. Meyerhoff, Professor of chemistry, Chemistry Department, University of Michigan, United States: mmeyerho@umich.edu
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- Philippe Buhlmann, Professor of organic chemistry, Chemistry Department, University of Minnesota, United States: buhlmann@chem.umn.edu
- Dibakar Bhattacharyya, Professor of Chemical Engineering, University of Kentucky, Lexington, KY, USA: db@uky.edu
- Sylvia Daunert, Professor of Biochemistry and Molecular Biology Lucille P. Markey Chair of Biochemistry and Molecular Biology Director, Dr. JT Macdonald Biomedical Nanotechnology Institute Director of Research, Center for Integrative and Complementary Medicine, University of Miami, USA: sdaunert@med.miami.edu
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- Pedro Molina currently works at the Department of Organic Chemistry, University of Murcia. Pedro, Spain: pmolina@um.es
- Victor Yang, Professor of Pharmaceutics and Pharmaceutical Science, University of Michigan, Ann Arbor, USA: vcyang@umich.edu

NATIONAL:

- Saad S. M. Hassan, Professor of Chemistry, Faculty of Science, Ain Shams University: saadssm@yahoo.com
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- Yasser Mohamed Mostafa, Professor of Environmental Chemistry and Director of Egyptian Petroleum Research Institute, Egypt: ymoustafa12@yahoo.com
- Mahmoud Sabry Rizk, Professor of Analytical Chemistry, Cairo University: msabry@sci.cu.edu.eg

OTHER ACTIVITIES:

- Referee for more than 10 journals such as Analytical Chimica Acta, Analytical and Bioanalytical Chemistry, Talanta, and Electroanalysis, ECS, Arabian Journal, Spectrochimica Acta, Sensors and Actuators, TUJS, Solid state electrochemistry etc.
- Referee of the national committee for promotion for the degree of professor/Assistant professor in the several research institute and Egyptian universities.
- Reviewed promotion files for faculty members in different research institute in Egypt and different Arab universities (e.g., University of Taibah, University of King Saud, University of King Abdel Aziz, etc.).
- Reviewed research proposals for different universities and national and international funding agencies).
- Editor for Taibah University Journal of Science (2011-2019).

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- Editor for SM Analytical and Bioanalytical Techniques (2019-now)
- Editor for Analytical Chemistry International (2020-now)