

DR. AHMAD MAKAHLEH



I. Personal Particulars

Full name	: Ahmad (Moh'd Ali) Hasan Makahleh
Sex	: Male.
Date and Place of Birth	: 25th June 1980, Amman.
Nationality	: JORDANIAN.
Marital Status	: Married.
H-Index (Scopus)	: 7
Research gate (RG Score)	: 23.02 (impact points, 59.89)
Mailing Address	: House number 16, behind Jabal Al-Nadif post office, Jabal Al-Nadif, Amman-Jordan H/P: +962-772820342 E-mail : makahleha@yahoo.com

II. Academic and Professional Qualifications

2012-2015	- Postdoctoral Fellow Univeristi Sains Malaysia, MALAYSIA.
2007-2011	- Ph.D (Analytical Chemistry-Separation) Thesis title: (Green approaches involving Liquid Phase Microextraction, Monolithic column and Capacitively Coupled Contactless Conductivity Detection in flow techniques) Universiti Sains Malaysia, MALAYSIA
2004-2006	- M.Sc. (Chemical Instrumentation) (2.78) Thesis Title: (The chromatographic separation of sugars from acid of biomass hydrolysis process) Universiti Sains Malaysia, MALAYSIA.
1998-2002	- B.Sc (Applied Chemistry) (76.3) Jordan University of Science and Technology, JORDAN.
1997-1998	- Tawjihi-Jordan (Science) (86.8) Salahuddin secondary school- JORDAN.

III. Research Interest

- Exploring the applicability of microextraction techniques for the analysis of environmental water, food toxins and nutrition using high performance liquid chromatography, ultra high performance liquid chromatography, gas chromatography, capillary electrophoresis and flow injection analysis.
- Developing a new microextraction approaches.
- Developing eco-environmental friendly methods by employing analytical green chemistry concepts.

IV. Publications

A. Published and submitted articles:

1. Hollow fiber-liquid phase microextraction with high performance liquid chromatography for the determination of trace carvedilol (β -blocker) in biological fluids.
A. Makahleh, W.C. Kek, B. Saad S.M. Salhim. J. Biomed. Chromatogr. **Under review** (IF: 1.662)
2. Modified vortex-assisted liquid-liquid microextraction using salt addition and CO₂ gas purge for the determination of furanic compounds in concentrated juices and dried fruits for high performance liquid chromatography analysis.
N.-B. Abu-Bakar, **A. Makahleh**, B. Saad. Food Chem., **Under review** (IF: 3.259)
3. Determination of Organophosphorus Pesticide Residues in Vegetables Using Solid Phase Micro-Extraction Coupled with Gas Chromatography-Flame Photometric Detector.
H.A. Sapahin, **A. Makahleh**, B. Saad, Arabian J.Chem. **In press** (IF:2.684)
4. Vortex-assisted liquid-liquid-liquid microextraction (VALLLME) Technique: a New Microextraction Approach for Direct Liquid Chromatography and Capillary Electrophoresis Analysis
A. Makahleh, H.F. Yap, B. Saad. Talanta, 143 (2015) 394-401 (IF: 3.511)
5. Simultaneous determination of α -ketoglutaric and pyruvic acids in urine as potential biomarkers for diabetic II and liver cancer using in situ-hollow fibre liquid phase microextraction with HPLC-UV.
A. Makahleh, G. Ben-Hander, B. Saad, Bioanalysis 7 (6) (2015) 713-723 (IF: 3.10)
6. Synthetic Phenolic Antioxidants (SPA) in Food". Book chapter in Handbook of Antioxidants in Food Preservation.
A. Makahleh, B. Saad, M.F. Bari WoodHead Publishing (UK). 1st edition 2015, ch3 pp 51-78.
7. Green Sample Preparations Based on Microextraction Platforms.
B. Saad and **A. Makahleh**, School of Chemical Sciences Bulletin-USM (2014) **In press**.
8. Sequential hollow-fibre liquid phase microextraction for the determination of rosiglitazone and metformin hydrochloride (anti- diabetic drugs) in biological fluids.
G. Ben-Hander; **A. Makahleh**, B. Saad, M.I. Saleh, K.W. Cheng, Talanta 131 (2015) 590-596 (IF: 3.511)
9. UPLC method for the determination of vitamin E homologues and derivatives in vegetable oils, margarines and supplement capsules using pentafluorophenyl column.
Y.F. Wong, **A. Makahleh**, B. Saad, M.N.M. Ibrahim, A.A. Rahim, N. Brosse, Talanta 130 (2014) 299-306 (IF: 3.511)
10. Vortex-assisted liquid-liquid microextraction coupled with high performance liquid chromatography for the determination of furfurals and patulin in fruit juices
N.-B. Abu-Bakar, **A. Makahleh**, B. Saad, Talanta 120 (2014) 47-54 (IF: 3.498)

<p>11. Hollow fiber liquid phase microextraction with in situ derivatization for the determination of trace amounts of metformin hydrochloride (anti-diabetic drug) in biological fluids G.M. Ben-Hander, A. Makahleh, B. Saad, M.I. Saleh, J. Chrom. B 941 (2013) 123-130 (IF: 2.487)</p>
<p>12. Capillary electrophoresis with capacitively coupled contactless conductivity detection for the determination of cis/trans isomers of octadec-9-enoic acid and other long chain fatty acids. Y.F. Wong, B. Saad, A. Makahleh, J. Chromatogr. A 1290 (2013) 82-90 (IF: 4.612)</p>
<p>13. In-vial Liquid-Liquid Microextraction-Capillary Electrophoresis Method for the Determination of Phenolic Acids in Vegetable Oils. N.B.A. Bakar, A. Makahleh, B. Saad, Anal. Chim. Acta, 742 (2012) 59-66 (IF: 4.555)</p>
<p>14. Micellar Electrokinetic Chromatography Method for the Simultaneous Determination of Furanic Compounds in Honey and Vegetable Oils W.Y. Foo, A. Makahleh, K.M. Al Azzam, N. Yahaya, B. Saad, S.A. Sulaiman, Talanta, 97 (2012) 23-31 (IF: 3.794)</p>
<p>15. Hollow fiber liquid-phase microextraction combined with high performance liquid chromatography for the determination of trace mitiglinide in biological fluids. H. Hadi, A. Makahleh, B. Saad, J. Chromatogr. B, 895–896 (2012) 131-136 (IF: 2.888)</p>
<p>16. Hydrazone-based ligands for micro-solid phase extraction-high performance liquid chromatographic determination of biogenic amines in orange juice C. Basheer, W. Wong, A. Makahleh, A.A. Tameem, A. Salhin, B. Saad, H.K. Lee, J. Chromatogr. A 1218 (2011) 4332-4339 (IF: 4.531)</p>
<p>17. Flow injection determination of free fatty acids in vegetable oils using capacitively coupled contactless conductivity detection A. Makahleh, B. Saad, Anal. Chim. Acta 694 (2011) 90-94 (IF: 4.555)-From PhD thesis.</p>
<p>18. Hollow Fiber Liquid-Phase Microextraction Coupled with Gas Chromatography-Flame Ionization Detection for the Profiling of Fatty Acids in Vegetable Oils G.H. Siang, A. Makahleh, B. Saad, B.P. Lim, J. Chromatogr. A 1217 (2010) 8073-8078 (IF: 4.194)</p>
<p>19. A 4-hydroxy-<i>N'</i>-[(<i>E</i>)-(2-hydroxyphenyl)methylidene]benzohydrazide-based sorbent material for the extraction-HPLC determination of biogenic amines in food samples A.A. Tameem, B. Saad, A. Makahleh, A. Salhin, M.I. Saleh, Talanta 82 (2010) 1385 – 1391 (IF: 3.722)</p>
<p>20. Hollow fiber liquid-phase microextraction for the determination of trace amounts of rosiglitazone (anti-diabetic drug) in biological fluids using capillary electrophoresis and high performance liquid chromatographic methods K.M. Al Azzam, A. Makahleh, B. Saad, S.M. Mansor, J. Chromatogr. A 1217 (2010) 3654-3659 (IF: 4.194)-From PhD thesis.</p>
<p>21. Determination of underivatized long chain fatty acids using RP-HPLC with capacitively coupled contactless conductivity detection A. Makahleh, B. Saad, G.H. Siang, M.I. Saleh, H. Osman, B. Salleh, Talanta 81 (2010) 20 – 24 (IF: 3.722)-From PhD thesis.</p>
<p>22. Assay and stability-indicating micellar electrokinetic chromatography method for the simultaneous determination of valacyclovir, acyclovir and their major impurity guanine in pharmaceutical formulations K.M. Al Azzam, B. Saad, A. Makahleh, H.Y. Aboul-Enein, A.A. Elbashir, Biomed. Chromatogr. 24 (2009) 535-543. (IF: 1.639)</p>

B. Articles under preparation:

<p>1. Vortex-assisted liquid-liquid-liquid microextraction for the determination of phenolic acids in honey and beverages. M. Shalash, A. Makahleh, B. Saad. To be submitted to J.Chromatogr. A (IF: 4.258)</p>
<p>1. Vortex-assisted liquid-liquid-liquid microextraction coupled with high performance liquid chromatography for the determination of chlorophenols in environmental water samples. E. Adam, A. Makahleh, B. Saad. To be Submitted to J. Chromatogr. A (IF: 4.258)</p>

V. International presentations

Articles	Conference name
<p>1. Hollow fiber liquid-phase microextraction for the determination of trace amounts of mitiglinide (anti-diabetic drug) in biological fluids. A. Makahleh, B. Saad</p>	<p>4th International Conference for Young Chemists, Penang, MALAYSIA 2013</p>
<p>2. HPLC analysis of urinary polyamines for evaluating the effectiveness of tualang honey in cancer therapy. E. Adam, A. Makahleh, B. Saad, S.A. Sulaiman</p>	<p>4th International Conference for Young Chemists, Penang, MALAYSIA 2013</p>
<p>3. Hollow fiber liquid phase microextraction with in situ derivatization for the determination of trace amounts of metformin hydrochloride (anti-diabetic drug) in biological fluids. G.M.H. Ben-Hander, A. Makahleh, B. Saad, M.I. Saleh</p>	<p>4th International Conference for Young Chemists, Penang, MALAYSIA 2013</p>
<p>4. Dibenzo-18-crown-6 bis 9-fluorene acetyl for solid phase extraction of silver ions from aqueous solution M.A. Moallim, A.S. Mohamed, B. Saad, A. Makahleh, M.I. Saleh</p>	<p>4th International Conference for Young Chemists, Penang, MALAYSIA 2013</p>
<p>5. New HPLC method for the determination of furfurals using dansylhydrazine as derivatization reagents. A. Makahleh, F. Mylène, B. Saad, T.N.A.T. Mahmud</p>	<p>4th International Conference for Young Chemists, Penang, MALAYSIA 2013</p>
<p>6. Simultaneous determination of furfurals and patulin in tropical juices using high performance liquid chromatography. N.B. Abu-Bakar, A. Makahleh, B. Saad</p>	<p>4th International Conference for Young Chemists, Penang, MALAYSIA 2013</p>
<p>7. Direct immersed-solid phase microextraction (DI-SPME) coupled with gas chromatography-flame photometric detector (GC-FPD) for determination of trace amounts of organophosphorus pesticides. H.A. Sapahin, A. Makahleh, B. Saad</p>	<p>4th International Conference for Young Chemists, Penang, MALAYSIA 2013</p>
<p>8. Determination of fatty acids in margarines using capillary electrophoresis with capillary coupled contactless conductivity detection.</p>	<p>4th International Conference for Young Chemists, Penang, MALAYSIA</p>

W.Y. Foo, <u>A. Makahleh</u> , B. Saad	2013
9. Matrix solid-phase dispersion-capillary electrophoresis method for the determination of phenolic acids in honey. M. Shalash, <u>A. Makahleh</u> , B. Saad	4 th International Conference for Young Chemists, Penang, MALAYSIA 2013
10. Eggshell Membrane as Sorbent Material for Extraction of Biogenic Amines in Food Samples E. Adam, <u>A. Makahleh</u> , B. Saad, A. Salhin	13 th International Symposium Advances in Extraction Technologies, Kuala lampur, MALAYSIA 2011
11. Micellar Electrokinetic Chromatography Method for the Determination of Furanic Compounds in Honey W.Y. Foo, K. Al-Azzam, <u>A. Makahleh</u> , B. Saad, S.A. Sulaiman	13 th International Symposium Advances in Extraction Technologies, Kuala lampur, MALAYSIA 2011
12. A New HPLC Method for the Rapid Determination of Furanic Compounds in Soft Drinks T.Y. Wooi, <u>A. Makahleh</u> , B. Saad	13 th International Symposium Advances in Extraction Technologies, Kuala lampur, MALAYSIA 2011
13. Isolation of α -ketoglutaric and Pyruvic Acids from Biological Fluids Using Hollow Fiber Liquid Phase Microextraction With In situ G.M.H.B. Hander, <u>A. Makahleh</u> , M.I. Saleh	13 th International Symposium Advances in Extraction Technologies, Kuala lampur, MALAYSIA 2011
14. Method Development for Separation of Phenolic Acids by Capillary Zone Electrophoresis N.B.A. Bakar, <u>A. Makahleh</u> , B. Saad, K.M. Al Azzam	13 th International Symposium Advances in Extraction Technologies, Kuala lampur, MALAYSIA 2011
15. Capillary Electrophoresis and high performance liquid chromatographic methods for the trace determination of Rosiglitazone (anti diabetic drug) in biological fluids preceded by three phase hollow fiber liquid phase microextraction K.M. Al Azzam, <u>A. Makahleh</u> , B. Saad	13 th International Symposium Advances in Extraction Technologies, Kuala lampur, MALAYSIA 2011
16. Capacitively coupled contactless conductivity as flow injection analysis detector for the determination of free fatty acids in vegetable oils <u>A. Makahleh</u> , B. Saad	13 th International Symposium Advances in Extraction Technologies, Kuala lampur, MALAYSIA 2011
17. Development of a micellar electrokinetic chromatography (MEKC) method for the analysis of furfurals N. Yahya, K.M. Al Azzam, <u>A. Makahleh</u> , B. Saad	3 rd International Conference for Young Chemists, Penang, MALAYSIA 2010

<p>18. Liquid-phase microextraction (LPME) coupled with gas chromatography for detection of fatty acids in palm oil and other vegetable oils G.H. Siang, B. Saad, <u>A. Makahleh</u>, B.P. Lim</p>	<p>3rd International Conference for Young Chemists, Penang, MALAYSIA 2010</p>
<p>19. Separation of phenolic acids in honey by capillary electrophoresis N.B.A. Bakar, K.M. Al Azzam, <u>A. Makahleh</u>, B. Saad</p>	<p>3rd International Conference for Young Chemists, Penang, MALAYSIA 2010</p>
<p>20. Capacitively coupled contactless conductivity as high performance liquid chromatographic detector <u>A. Makahleh</u>, B. Saad, H. Osman</p>	<p>3rd International Conference for Young Chemists, Penang, MALAYSIA 2010</p>
<p>21. Comparative study on the high performance liquid chromatographic methods for the separation of betulin and betulinic acid in plant extract. <u>A. Makahleh</u>, B. Saad, A. Salhin, H. Osman</p>	<p>Separation Science Singapore Conference, SINGAPORE 2009</p>
<p>22. A novel method for determination underivatized fatty acids in vegetable oils <u>A. Makahleh</u>, B. Saad, H. Osman</p>	<p>10th Asian Conference on Analytical Sciences (ASIANALYSIS X), Kuala Lumpur, MALAYSIA 2009</p>
<p>23. A process for separating acid-sugar mixtures using ion exchange chromatography. <u>A. Makahleh</u>, M.S. Jab, B. Saad, M.Y.A. Hamid</p>	<p>2nd International Conference for Young Chemists, Penang, MALAYSIA 2008</p>

VI. Supervision (current and graduated students)

A. PhD students

1. Gazala Ben Hander (graduated 2014)
2. ElBaleeq Adam (2011-current)
3. Marwan Shalash (2011-current)
4. Nor Shifa Shuib (2012-current)
5. Nur Bahiyah Abu bakar (2013-current)
6. Hind Hadi (exchange student, Iraq-2011)

B. Master students

1. Nur Bahiyah Abu Bakar (graduated 2012)
2. Wong Yong Foo (graduated 2013)
3. Haizarul Aida Sapahin (2011-current)
4. Hurin Ain Wan abi Sabian (graduated 2014)
5. Kek Wan Cheng (graduated 2014)
6. Nor Farhana Mohd Fazil (graduated 2014)

7. Rozaiha Rhmat (graduated 2014)
8. Yap Hui Fang (2013-current)
9. Mylene Farinet (exchange student, France-2012)
10. Aline Langenfeld (exchange student, France-2014)
11. Ahmed Saud (exchange student, Iraq-2014)

C. Undergraduate students

1. Kek Wan Cheng (graduated 2012)
2. Nur Hidayahni Ahmad (graduated 2013)
3. Nurshafiqah Shakri (graduated 2014)
4. Nurul Wahida Ramli (graduated 2014)
5. Fattin Amira Rosli (graduated 2014)

VII. Experiences

- Postdoctoral fellow, School of Chemical Sciences-Universiti Sains Malaysia, Penang, MALAYSIA, (Nov. 2012- Feb. 2015).
- Postdoctoral fellow, School of Chemical Sciences-Universiti Sains Malaysia, Penang, MALAYSIA, (Jan.-Sep. 2012)
- Teaching assistance for electroanalytical methods (first academic semester/2010 & 2011).
- Teaching assistance for master course-separation science lab (design and teach experiments) (second academic semester/2010, 2011, 2012, 2013 & 2014)
- Research assistance, Universiti Sains Malaysia, Penang, MALAYSIA, (Nov. 2007- Jun. 2010)
- R&D Manager, Karisma Ganda Research & Consultancy Sdn. Bhd., Sungai Petani, Kedah, MALAYSIA, (Mar. 2006- Nov. 2007).
- Analyst, Hikma (Multinational Pharmaceutical Group), Amman, JORDAN, (Jul. 2003- Jun. 2004).
- Analyst, Advanced Pharmaceutical Industries, Amman, JORDAN, (Apr. 2002- Jun. 2003).
- Analyst, International Pharmaceutical Research Center (IPRC), Amman, JORDAN, (Mar. 2002).
- Trainee, Dar Al Dawa (pharmaceutical company), Amman, JORDAN, (Jul. – Sep. 2001).

VIII. Awards

- Best poster presentation “Eggshell Membrane as Sorbent Material for Extraction of Biogenic Amines in Food Samples”, 13th International Symposium Advances in Extraction Technologies. MALAYSIA, 2011.
- Fellowship, Universiti Sains Malaysia, Penang, MALAYSIA (Jun. 2010- Dec. 2011).
- Excellent achievement in the category of Journal Publication, Sanggar Sanjung Award, Universiti Sains Malaysia, 2014.
- Excellent achievement in the category of Journal Publication, Sanggar Sanjung Award, Universiti Sains Malaysia, 2013.
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- Excellent achievement in the category of Journal Publication, Sanggar Sanjung Award, Universiti Sains Malaysia, 2010.
- Excellent achievement in the category of Journal Publication, Sanggar Sanjung Award, Universiti Sains Malaysia, 2009.

IX. Scientific Skills

- Expert chromatographer (training, operating, troubleshooting and maintaining chromatographic systems (High Performance Liquid Chromatography (HPLC), Gas Chromatography (GC) and Capillary Electrophoresis (CE)).
- Expert on separation, method development and Validation.
- Good experience on sample preparation and microextraction techniques (e.g., Liquid Phase Microextraction (LPME), Vortex Assisted Liquid-Liquid Microextraction (VALLME), Solid Phase Microextraction (SPME), Effervescence Solid Phase Microextraction, Micro-Solid Phase Extraction (μ -SPE), Solid Phase Extraction (SPE), and Matrix Solid Phase Dispersion (MSPD), etc.).
- Reviewer for Food Control and Talanta journals.
- Very good knowledge of Good Laboratory Practice (GLP), Good Manufacture Practice (GMP) according to Food and Drug Administration (FDA) regulations.
- Good experience on writing and editing articles.

X. Attended trainings and Workshops

- “The quality control department on general QC and high performance liquid chromatography SOP’s”, Hikma Pharmaceuticals, Amman-Jordan (10/2013).
- “Chirality: analysis and emerging issues” School of Chemical Sciences-USM, Penang-Malaysia (10/2007).
- “Occupational safety and health course for postgraduate students”, Occupational Safety and Health Committee of USM-USM, Penang-Malaysia (11/2007).
- “Short course/workshop on procedures of method validation and verification”, Institiut Kimia Malaysia & Univerisity Sains Malaysia, Penang-Malaysia (1/2008).
- “Introductory data analysis & statistical process control”, School of Mathematical Sciences-USM, Penang-Malaysia (12/2009).
- “Optimizing your laboratory’s productivity via improved sample preparation technique and advanced column technology”, IT Tech & Agilent Technologies, Penang-Malaysia (10/2010).
- “Solid-phase microextraction (SPME)”, Institiut Kimia Malaysia, Kuala Lumpur-Malaysia (9/2011).
- “Liquid-phase microextraction (LPME)”, Institiut Kimia Malaysia, Kuala Lumpur-Malaysia (9/2011).
- “Malaysia Standards”, Institiut Kimia Malaysia & Standards Malaysia, Penang-Malaysia (9/2013).

XI. Personal Skills

- Fluent in English (speaking, writing and listening).
- Excellent in Microsoft office (word, excel, powerpoint and publisher).

- Professional typing rate of 40-50 wpm (words per minute).
- Excellent in using chemistry software (ChemDraw, ChemSketch).
- Ability to express ideas clearly and confidently in speech.
- Work confidently within a group.
- Determination to get things done. Make things happen and constantly looking for better ways of doing things.
- Ability to plan activities and carry them through effectively.
- Adaptation successfully to changing situations and environments.
- Managing time effectively, prioritizing tasks and able to work to deadlines.
- Ability to motivate and direct others.
- Ability to maintain effective performance under pressure.
- Adhering to standards and procedures.
- Accepting responsibility for views and actions and able to work under direction and initiative.

XII. Invited Speaker and training courses

1. Ahmad Makahleh (May 2014), Case study in Microextraction and separation techniques. Presented for master (mixed mode) students, School of Chemical Sciences-Universiti Sains Malaysia.
2. Ahmad Makahleh (March 2014), Chromatography: principle and theory. Presented for master (mixed mode) students, School of Chemical Sciences-Universiti Sains Malaysia.
3. Ahmad Makahleh (August 2013), Gas Chromatography-Principle and troubleshooting. Workshop (2 days) for staff and postgraduate students, School of Chemical Sciences-Universiti Sains Malaysia.
4. Ahmad Makahleh (May 2013), Liquid phase microextraction: Introduction and Applications. Presented for master (mixed mode) students, School of Chemical Sciences-Universiti Sains Malaysia.
5. Ahmad Makahleh (May 2012), Capacitively coupled contactless detector (C^4D): Introduction and Applications. Presented for master (mixed mode) students, School of Chemical Sciences-Universiti Sains Malaysia.
6. Ahmad Makahleh (Mar. 2011), Capacitively coupled contactless and evaporative light scattering as alternative detectors for liquid chromatography. Presented for master (mixed mode) students, School of Chemical Sciences-Universiti Sains Malaysia.
7. Ahmad Makahleh (Mar. 2010), C^4D and ELSD as LC detectors. Presented for master (mixed mode) students, School of Chemical Sciences-Universiti Sains Malaysia.

XIII. Consultancy

1. ITW Meritex Sdn. Bhd. (Penang)
Purpose: Analysis of volatile compounds in polymer tape samples using SPME (Apr. 2014)
2. Ministry of Health Malaysia
Purpose: Analysis of formaldehyde in flour (Dec. 2010)
3. B. Braun Medical Industries Sdn Bhd (Penang)
Purpose: Interpretation of EDX analysis (Feb. 2010)
4. B. Braun Medical Industries Sdn Bhd (Penang)
Purpose: Analysis of methanol and aluminum in sodium lactate solutions using GC-FID and ICP-MS (Jan. 2010)
5. Aquastar SND BHD (Penang)
Purpose: Analysis of cations and anions in water samples (Mar. 2008)

XIV. Professional references

1. Professor Bahruddin Saad, School of Chemical Sciences-Universiti Sains Malaysia, 11800 Penang, Malaysia. H/P: +60134310109, E-mail: bahrud@usm.my
2. Professor Wan Aini Wan Ibrahim, Department of Chemistry, Faculty of Science, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia. Tel.: +60 75534311, E-mail: wanaini@kimia.fs.utm.my ; waini@utm.my
3. Professor Norita, School of Chemical Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia. Tel.: +6046533686, E-mail: mnorita@usm.my
4. Professor Hasnah Osman, School of Chemical Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia. Tel.: +6046533558, E-mail: ohasnah@usm.my
5. Professor Glen D. Lawrence, Department of Chemistry and Biochemistry Long Island University, 1 University Plaza, Brooklyn, 11201 NY, USA. Tel.: +7184881452, E-mail: lawrence@liu.edu