

CURRICULUM VITAE

KHALED AIEDEH, PH.D.

PERSONAL DATA:

Name : Khaled Aiedeh
Date of Birth : Nov. 03, 1964
Place of Birth : Jerash - Jordan.
Nationality : Jordanian
Marital Status : Married, with seven children

ADDRESS:

Department of Pharmaceutics and Pharmaceutical Technology,
Faculty of Pharmacy,
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EDUCATION

1. Ph.D. (Pharmaceutical Sciences), July 1997, Bologna University, Bologna, Italy.
2. B.Sc. (Pharmacy and Pharmaceutical Chemistry), 1988, Faculty of Pharmacy, Baghdad University, Iraq.

LANGUAGE SKILLS

Arabic: Mother Tongue
English : Very good
Italian: Very good:

RESEARCH INTEREST

- Chemical modifications of existing natural and synthetic biodegradable polymers, aiming at utilizing the newly-developed polymers in pharmaceutical applications, such as, *new drug delivery systems, sustained release matrices, enteric coating, granulation binders, disintegrants, microencapsulations and Absorption enhancers.*
- Metal-ligand chelation and its pharmaceutical application, e.g. synthesis of metal-chelating polymeric ligands followed by their cross-synthetic linking with metallic cations and evaluating the generated matrices as matrices for controlled drug release.

- The use of molecular modeling to evaluate and predict the efficiency of different excipients in formulation.
- Development of controlled release dosage forms based on polymer-drug and polymer-polymer interaction.
- Optimization of pharmaceutical formulations and processes using the design of experiment approach and response surface methodology.

TITLE OF PH.D. THESES

- Impiego del chitosano e di suoi derivati in formulazioni a rilascio controllato. (The use of chitosan and chitosan derivatives in the formulation of controlled release systems).

PRESENT POSITION

- Professor of Pharmacy –Faculty of Pharmacy, University of Jordan).

ACADEMIC AND PROFESSIONAL POSITIONS

- 9-/2006-9/2010 Dean, Faculty of Pharmacy, University of Jordan, Amman-Jordan
- 9/2004 – 9/2005 Vice Dean, Faculty of Pharmacy, University of Jordan, Amman, Jordan.
- 9/2003 – 9/2004 Dean, Faculty of Pharmacy, Applied Science University, Amman, Jordan.
- 5/2003 Promoted to rank of Associate Professor of Pharmaceutics, Faculty of Pharmacy, University of Jordan, Amman, Jordan.
- 26/9/2002 – 15/9/2003 Chairman, Department of Pharmaceutics and Pharmaceutical Technology, University of Jordan, Amman, Jordan.
- 26/9/1998 – 26/9/2002 Dean Assistant, Faculty of Pharmacy, University of Jordan, Amman, Jordan.
- 1/3/1997 - 15/7/1996 Teaching Assistant, Department of Chimica Farmaceutica Applicata e Tecnologia, University of bologna, Bologna Italy.
- 2/12/1991 - 22/3/1992 Teaching and Research Assistant, Department of Pharmaceutics, Faculty of Pharmacy, University of Jordan, Amman, Jordan.

- 15/8/1988 - 20/11/1991 Pharmacist, King Hussein Medical Center, Amman, Jordan.

TEACHING EXPERIENCE AT THE UNIVERSITY OF JORDAN

- Undergraduate Courses, Faculty of Pharmacy
 - Industrial pharmacy(I) Course, Fourth year students
 - Practical Industrial(I), Fourth year students
 - Industrial Pharmacy (II) Course, Fourth year students
 - Practical Industrial Pharmacy (II) Course, Fourth year students
 - Advance Pharmaceutical Technology Course, Fifth year students
- Postgraduate M.Sc Courses
 - Drug Delivery(I), Faculty of Pharmacy
 - Drug Delivery(II), Faculty of Pharmacy
 - Quality Control of Pharmaceutical Dosage Forms, Faculty of Medicine (For M. Sc students in Toxicology), Faculty of Medicine

M.SC STUDENT SUPERVISION

- **Supervisor of** MSc thesis, Oral Delivery of Protein / Polypeptide Using Chitosan Derivatives. Ehab Shamleh.
- **Co-Supervisor of** MSc thesis, Preparation of novel matrices based on alginate-chitosan phthalate composites via ionotropic cross linking with calcium (II) and/or zinc (II) and their evaluation as sustained release formulations using chlorpheniramine maleate as model drug.
- **Co-Supervisor of** MSc thesis, Effect of formulation variables on the drug release properties from tablets made from ionically crosslinked polymeric matrices. Rima Shenouda.
- **Supervisor of** M.Sc. thesis titled Casein drug beads, the effect of physical crosslinking using fatty acids with or without microwave irradiation) Riyam Maraqa.
- **Supervisor of** M.Sc. thesis titled (Effect of Formulation and Process Variables on Drug Release from Wax Microspheres Prepared by Solvent Evaporation) Shireen Turk.
- **Supervisor of** M.Sc. thesis titled (Optimization of Cross-linking Procedures of Chitosan Derivatives for the Preparation of Controlled Release Drug Carriers) Hadil Hussein.
- **Supervisor of** M.Sc. thesis titled (In vitro evaluation and cytocompatibility of natural polymers for local / systemic drug delivery of macromolecules) Sanaa Bardawil. Defended July, 2006.

- **Supervisor** of M.Sc. thesis titled (Effect of Formulation Variables on the Drug Release Stability of Drug Release from Polyvinyl Acetate - Povidone Matrices). Suha Al-Muhaissen .Defended May 2006.
- **Supervisor** of M.Sc. thesis titled (Formulation and evaluation of microspheres containing cefuroxime acetil for oral administration) abdelhamid Abu Odeh. Defended May, 2005.
- **Supervisor** of M.Sc thesis titled (Synthesis and evaluation of a number of N-trisubstituted chitosan derivatives as phamaceutical excipients in formulation) Nisren M. Jaber, Faculty of Pharmacy January 2002.
- **Supervisor** of M. Sc thesis titled (The use of molecular modeling to evaluate and predict the efficiency of different transdermal penetration enhancers) Hala F. Abu Shamat, Faculty of Pharmacy, January 2002.
- **Co-supervisor** of M. Sc thesis titled (The assessment of bentonite clay deposits from different location of Jordan for pharmaceutical uses) Mariam A. Moslh, Department of Earth and Environmental Science, Yarmuk University, June 2001
- **Co-supervisor** of M.Sc. thesis titled (The potentiality of the Wadi AS-Sir limestone from Ajlun area 'Ras Munif' as fillers in pharmaceutical and paint industries) Ibrahim K. Al-Fawares, Department of Earth and Environmental Science, Yarmouk Universty, November 1999.
- **Supervisor** of M.Sc Thesis titled (Preparation and evaluation of films based on novel semisynthetic polymers) Samah S.A. Ibrahim, Faculty of Pharmacy, 2002.

CURRENT RESEARCH PROJECTS

- Used of Thiolated polymers as absorption enhancers for polypeptid drugs
- Synthesis of novel thermoplastic polymers with interesting biological activities, (developing a thermoplastic polymer, which we anticipate to have powerful biocidal activity).
- The synthesis and microbiological evaluation of some novel derivatives of some natural and synthetic polymers.
- Development of a pH independent matrix systems based on polymer drug interaction.
- Polymer-polymer complexes as a matrix for controlled release oral dosage forms.
- Dissolution enhancement of poorly water soluble drugs using lipid based excipients.

- Development and evaluation of wax microspheres for controlled drug delivery using solvent evaporation method.
- Optimization of ionic crosslinking and gelation of natural and semisynthetic polymers for controlled drug release.

MEMBERSHIP IN SCIENTIFIC AND PROFESSIONAL SOCIETIES

- Jordanian Pharmaceutical Society.
- European Chitin Society
- The European Association for International Education.

SKILLS

- Excellent command in the use of Microsoft Office applications.
- Excellent command in different data base and patent search

PUBLICATIONS

- Effects of thermal curing conditions on drug release from polyvinyl acetate-polyvinyl pyrrolidone matrices
By AlKhatib, Hatim S.; Hamed, Saja; Mohammad, Mohammad K.; Bustanji, Yasser; AlKhalidi, Bashar; **Aiedeh, Khaled M.**; Najjar, Samer
From AAPS PharmSciTech (2010), 11(1), 253-66. Language: English, Database: CAPLUS
- A comparative enzymatic inhibition assay as a surrogate indicator of pharmaceutical and potency equivalence of two orlistat formulations By Mohammad, Mohammad; **Aiedeh, Khaled M.**; Al Khatib, Hatim S.; Tawaha, Khaled; Al Khalidi, Bashar; Al-Masri, Ihab M.; Hamed, Saja; Bustanji, Yasser
- Hatim S., Alkhatib, **Khaled, M., aiedeh**, Mohammad Mohammad, Effects of Thermal Curing Conditions on Drug Release form Polyvinyl Acetate-Polyvinyl Pyrrolidone Matrices, **AAPS PharmSciTech (11(1)-253-266)**
- Mohammad Mohammad, **Khaled, M., aiedeh**, Hatim S., Alkhatib, A comparative Enzymatic Inhibition Assay as a surrogate Indicator of Pharmaceutical and Potency Equivalence of Two Orlistat formulation, **Jordan Journal of Pharmaceutical Sciences (accepted for publication 2010)**
- Maraqa, Riyam, Bani-Jaber, Ahmad, **Aiedeh, Khaled**, Hamdan, Imad. Drug-loaded casein beads: Influence of different metal types on cross-linkers and oleic acid as a plasticizer on some properties of the beads. (**J. DRUG. DEL. SCI. TECH., 19(2) 125-131 2009**).

- Sweileh, Bassam, Al-Hiari, Yusuf, *Aiedeh, Khaled*. A new nonphosgene route to poly (bisphenol-A carbonate) by melt phase interchange reactions of alkylene diphenyl dicarbonates with bisphenol A. **J. Appl. Polym. Sci.**, 110, 4, 2278 – 2292, **2008**.
- AlKhatib, Hatim S.; *Aiedeh, Khaled M.*; Bustanji, Yasser; Hamed, Saja; Mohammad, Mohammad K, AlKhalidi, Bashar. Interaction of Chitosan Succinate with Bupirone HCl: Implications for pH-Independent Release from Hypromellose Matrices. **Eur. J. Pharm. Biopharm.** 70, 3, 804-812, **(2008)**.
- *Aiedeh, Khaled M.*, Mohammad, Mohammad, AlKhatib, Hatim S., Bustanji, Yasser. Synthesis and Pharmaceutical applications of Chitosan Triacetic Acid Sodium Salt. **Eur. J. Pharm. Biopharm.**, 69, 2, 735-742 **(2008)**.
- Al-Zoubi, Nizar, AlKhatib, Hatim S., Bustanji, Yasser, *Aiedeh, Khaled*. Sustained-release bupirone HCl microparticles produced by cospray-drying with aqueous polymeric dispersions. **(In Press, Eur. J. Pharm. Biopharm.)**.
- *Aiedeh, Khaled M.*; Taha, Mutasem O.; Al-Hiari, Yusuf; Bustanji, Yasser; AlKhatib, Hatim S. Effect of Ionic Crosslinking on The Drug Release Properties of Chitosan Diacetate Matrices. (Journal of Pharmaceutical Sciences, 96(1), 38-43 (2007).
- AlKhatib, Hatim S., *Aiedeh, Khaled M.*, Taha, Mutasem O., Bustanji, Yasser, and Sweileh, Bassam. Synthesis and in Vitro Evaluation of Iron-Crosslinked N-Methyl and N-Benzyl Hydroxamated Derivatives of Alginic Acid as Controlled Release Carriers. (European Polymer Journal, 42, 2464-2474 (2006).
- *Aiedeh, Khaled M.*, AlKhatib, Hatim, Zoubi, Nizar, and Taha, Mutasem O. Application of Novel Chitosan Derivatives in Dissolution Enhancement of a Poorly Water Soluble Drug Using Spray Drying Technique. *Pharmazie*, 61(4), 306-311 (2006).
- Taha, Mutasem, *Aiedeh, Khaled*, Al-Hiari, Yusuf and Al-Khatib, Hatim. Synthesis of Zinc-Crosslinked Thiolated Alginic acid Beads and their In Vitro Evaluation as Potential Enteric Delivery System Utilizing Folic Acid as Model Drug. *Pharmazie*, 60(10), 736-742 (2005).
- *Aiedeh, Khaled*, Taha, Mutasem and Al-Khatib, Hatim. Evaluation of Chitosan-Succinate and Chitosan-Phthalate as Enteric Coating Polymers for Diclofenac Sodium Tablets. *J. Drug Del. Sci. Tech.*, 15(3) 207-211 (2005).
- *Aiedeh, K.*; Taha, M. O.; Sweileh, B., Testosterone-succinate-dextran and testosterone-succinate-polyvinyl alcohol conjugates: Synthesis and testosterone release in plasma. *Acta Technologiae et Legis Medicamenti* 12(3), 267-281 (2001).

- Amro, B. I.; Taha, M. O.; *Aiedeh, K.*, Evaluation of chitosan-triethyleneglycol-phthalate as a potential matrix for chlorpheniramine maleate controlled-release oral tablets. *Acta Technologiae et Legis Medicamenti* 12(3), 239-252 (2001) .
- *Aiedeh, K.*; Taha, M. O., Synthesis of iron-crosslinked chitosan succinate and iron-crosslinked hydroxamated chitosan succinate and their in vitro evaluation as potential matrix materials for oral theophylline sustained-release beads. *Eur. J. Pharm. Sci.* (2001), 13(2), 159-168.
- Taha, M. O.; *Aiedeh, K. M.*; Amro, B., Investigation of the suitability of chitosan-triethylene glycol phthalate as a matrix in prolonged-release, potentially orally administered, chlorpheniramine maleate granules. *S.T.P. Pharma Sci.* 10(5), 395-400 (2000).
- Aburjai, T.; Amro, B. I.; *Aiedeh, K.*; Abuirjeie, M.; Al-Khalil, S., Second derivative ultraviolet spectrophotometry and HPTLC for the simultaneous determination of vitamin C and dipyrone. *Pharmazie* 55(10), 751-754 (2000).
- Taha, M. O.; *Aiedeh, K.*, Synthesis of iron-crosslinked hydroxamated alginate acid and its in vitro evaluation as a potential matrix material for oral sustained-release beads. *Pharmazie.* 55(9), 663-667 (2000).
- *Aiedeh, Khaled*; Taha, Mutasem O., Synthesis of chitosan succinate and chitosan phthalate and their evaluation as suggested matrixes in orally administered colon-specific drug delivery systems. *Archiv der Pharmazie (Weinheim, Germany)* 332(3), 103-107 (1999).
- *Aiedeh, Khalid M.*; Taha, M. O., Synthesis of chitosan triethylene glycol phthalate and its evaluation as a binder in wet granulation procedures. *Pharmazie,* 54(8), 614-619 (1999).
- *Aiedeh, K.*; Orienti, I.; Bertasi, V.; Zecchi, V., Chitosan and chitosan linked to triethylene glycol glutarate or betaine as tableting excipients for the sustained release of indomethacin. *S.T.P. Pharma Sci,* 8(5), 291-296, (1998).
- *Aiedeh, K.*; Gianasi, E.; Orienti, I.; Zecchi, V., Chitosan microcapsules as controlled-release systems for insulin. *J. Microencapsulation.* 14(5), 567-576 (1997).
- Orienti, I.; *Aiedeh, K.*; Zecchi, V., Fatty acid substituted poly(vinyl alcohol)s. Proposal for a new polymer suitable for biodegradable microspheres. *Proc. Int. Symp. Controlled Release Bioact. Mater.* 24th 495-496, (1997).
- Orienti, I.; *Aiedeh, K.*; Ponti, C.; Gianasi, E.; Zecchi, V., Progesterone loaded chitosan microspheres. Effect of triethylene glycol glutarate linked to the chitosan molecule on drug release. *S.T.P. Pharm. Sci.,* 6(6), 424-429, (1996).

- Orienti, I.; Gianasi, E.; *Aiedeh, K.*; Zecchi, V., Microparticles of BSA substituted with deoxycholic acid and triethylene glycol glutarate. Correlations between the physicochemical properties of the matrix and the release kinetics. J. Pharm. Belg. 51(3), 125-130, (1996).
- Indomethacin-loaded chitosan microspheres. Correlation between the erosion process and release kinetics. Orienti, I.; *Aiedeh, K.*; Gianasi, E.; Bertasi, V.; Zecchi, V. J. Microencapsulation (1996), 13(4), 463-472.
- Orienti, Isabella; *Aiedeh, Khaled*; Gianasi, Elisabetta; Ponti, Cristina; Zecchi, Vittorio., Chitosan-indomethacin conjugates. Effect of different substituents on the polysaccharide molecule on drug release. Arch. Pharm. (Weinheim, Ger.) 329(5), 245-250 (1996).
- Orienti, Isabella; *Aiedeh, Khaled*; Gianasi, Elisabetta; Coppola, Antonietta; Zecchi, Vittorio. Microspheres of poly(2-hydroxyethyl methacrylate-co- \square -methacryloyloxyethyldeoxycholate) crosslinked with ethylene glycol dimethacrylate. Pharm. Acta Helv. 70(3), 241-246, (1995).
- Orienti, I.; Gianasi, E.; *Aiedeh, K.*; Zecchi, V., Indomethacin loaded PHEMA microspheres. Effect of drug concentration in the monomer-crosslinker mixture on the release kinetics. J. Pharm. Belg. 50(1), 11-18, (1995).
- Orienti, I.; Segurini, P.; Gianasi, E.; *Aiedeh, K.*; Conte, U.; Zecchi, V., Effect of drug concentration in the monomer/crosslinker mixture on the loading levels and the release kinetics of non-steroidal anti-inflammatory drugs from ethylene glycol dimethacrylate cross-linked polyhydroxyethyl methacrylate microspheres. S.T.P. Pharma Sci., 4(6), 431-436 (1994).

CONFERENCES, MEETINGS AND WORKSHOPS

- AlKhatib, Hatim S.; *Aiedeh, Khaled M.*; Bustanji, Yasser; Hamed, Saja; Mohammad, Mohammad K.; AlKhalidi, Bashar; Najjar, Samer. Modulation of Buspirone HCl Release from Hypromellose Matrices Using Chitosan Succinate: Implications for pH Independent Release. Submitted Abstract for the Jordan Royal Medical Services Conference to be held in May 2008.
- Al-Zoubi, Nizar, Al Khatib, Hatim, Bustanji, Yasser and *Aiedeh, Khaled*. Sustained release buspirone HCl microparticles prepared by cospray-drying with aqueous polymeric dispersions. Poster presentation, 13th Pan-Hellenic Pharmaceutical Congress, Athens, Greece, May 12-14, 2007.
- AlKhatib, Hatim S.; Mohesin, Suha; *Aiedeh, Khaled* and Bustanji, Yasser. Effect of Formulation variables on the Drug Release Stability of Polyvinyl Acetate / Povidone – Based Matrices. Poster Presentation. 8th International

Symposium on Pharmaceutical Sciences (ISOPS8), Ankara, Turkey, June 13th-16th, 2006.

- **Aiedeh, Khaled M.**; AlKhatib, Hatim S. and Taha, Mutasem O. Evaluation of Anionic Chitosan Derivatives as Enteric Coating Polymers for Diclofenac Sodium Tablets. Poster Presentation. 8th International Symposium on Pharmaceutical Sciences (ISOPS8), Ankara, Turkey, June 13th-16th, 2006.
- AlKhatib, Hatim; **Aiedeh, Khaled** and Bustanji, Yasser. Interaction of casein and Diltiazem HCl: Implications for Controlled Release Formulation. The 3rd International Conference of the Royal Medical Services (In collaboration with the Royal College of Physicians of London), Amman, Jordan, April 5th-8th 2006.
- **K. Aiedeh.**, A post-graduate Program In Pharmaceutical Sciences at Bologna University : Academic Achievement and Life Experience, Higher Education in The European Union, 25-26 October 1999, Faculty of Student Affairs, University of Jordan, Amman-Jordan.
- **K. Aiedeh**, E. Gianasi, I. Orenti, V. Zecchi, Loading and release of NSAIDs in poly(2-hydroxyalchyl methacrylate) matrices. 34° Simposio AFI (Associazione Farmaceutici Industria) 1994, Venezia San Giuliano-11-13 Maggio, Italy
- Orenti, I., **K. Aiedeh**, V. Zecchi, Erosione e cinetiche di rilascio in matrici bioerodibili. 35° Simposio AFI (Associazione Farmaceutici Industria) 1995, Centro Congressi 'Le Conchiglie' - Riccione Italy
- Orenti, **K. Aiedeh**, V. Zecchi, Fatty acid substituted polyvinylalcohol. Proposal for a new polymer suitable for biodegradable microspheres. The 24th International Symposium Controlled Release of Bioactive Materials, 1997, Stockholm, Sweden.
- **K. Aiedeh**, Progesterone Loaded Chitosan Microspheres of Triethylene Glycol Glutarate linked to the Chitosan Molecule on Drug Release. The first Italian Jordanian Conference, 1998
- **K. Aiedeh**, M. Taha, Synthesis of Iron-Crosslinked Hydroxamated Alginic Acid and its In vitro Evaluation as a Potential Material for Oral Sustained – Release Beads. The 2nd International Conference of the Faculty of Pharmacy , October, 2001, Amman-Jordan

BOOKS

- V. Zecchi, **K. Aiedeh**, I. Orenti, Controlled drug delivery systems in Chitin Handbook Edited by Riccardo A.A. Muzzarelli and Martin G. Peter European Chitin Society, Lyon, 1997.
- W. Saqqa, **K. Aiedeh**, M. Taha, Industrial assessment of limestone from north and northwestern Jordan for pharmaceutical application. The Higher Council for

Science and Technology, Amman, Jordan, 2004.

ACTIVITIES

- عضو مجلس امناء جامعة العلوم والتكنولوجيا الاردنية
- عضو لجنة العطاءات المركزية-الجامعة الاردنية
- عضو لجنة تحسن اوضاع الهيئة التدريسية-الجامعة الاردنية
- عضو مجلس الجامعة الأردنية.
- عضو مجلس عمداء الجامعة الأردنية .
- Member, High Committee of Food and Drugs, Jordan Food and Drug Administration, Since 2006.
- Member, Technical Committee for Drug Approval and Registration, Jordan Food and Drug Administration, Since 2002.
- عضو اللجنة المؤسسية لشركة التقنية الصيدلانية لعام 2004 .
- عضو اللجنة الفنية لوضع تعليمات تنظيم عمل مختبر الرقابة الدوائية بتاريخ .
- المشاركة في البرنامج التدريبي حول تطبيقات النظائر المشعة في التكنولوجيا الحيوية خلال الفترة 5-1998/9/23.
- عضو لجنة الجامعة و المجتمع خلال العام الجامعي 1999/1998.
- منسق لجنة السلامة العامة خلال العام الجامعي 1999/1998.
- المشاركة في ورشة العمل بعنوان (حقوق المريض) في 1999/6/28.
- المشاركة في أعمال تطبيقات حاسوبية للدراسات المتعلقة بثبات الأدوية في الصناعة الدوائية.
- المشاركة في عضوية اللجنة التي زارت البرتغال لتقييم وثائق انتاج مستحضر Heparin/Hilkma في مصانع ادوية الحكمة بتاريخ 2002/4/24.
- الترشيح لجائزة وزارة التعليم العالي والبحث العالمي للباحثين المتميزين/الجائزة التقديرية لعام 2004.
- الترشيح لنيل جائزة عبد الحميد شومان للباحثين العرب الشبان لعام 2003.

- حضور ندوة "تسجيل الأدوية المحضرة بيولوجياً" في سويسرا في الفترة ما بين 3-2005/3/4.
- المشاركة في ورشة عمل بعنوان تقييم الأدوية الجنيسة خلال الفترة 4-2005/4/6.
- المشاركة في ورشة عمل حول تسجيل الأدوية المنتجة حيويًا بالتعاون مع منظمة الغذاء والدواء الأمريكية من 3-2005/12/4.
- عضو في مجلس العمداء/الجامعة الأردنية
- عضو في مجلس الجامعة/الجامعة الأردنية
- عضو اللجنة التنفيذية للجمعية العلمية لكليات الصيدلة في الوطن العربي
- عضو في اللجنة الفنية والمهنية/مستشفى الجامعة الأردنية
- عضو في اللجنة الإدارية/مستشفى الجامعة الأردنية
- عضو في اللجنة العليا/المؤسسة العامة للغذاء والدواء
- محكم لجائزة انتل الدولية للعلوم والهندسة لعام 2007 / وزارة التربية والتعليم
- عضو اللجنة الوطنية للأخلاقيات الطبية / وزارة الصحة
- محكم لجائزة الطالب المتميز / وزارة التربية والتعليم
- مقرر لجنة التخلص من المواد الضارة والخطرة والمخلفات الكيميائية/الجامعة الأردنية