

## *Curriculum Vitae*

### **Iman Hamdan, Ph.D.**

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Faculty of Pharmacy  
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#### **Highlights of Qualifications**

- Ph.D. in Pharmaceutical Technology and Drug Delivery, M.Sc. in Pharmaceutical Sciences; Thesis Track and B.Sc. in Pharmacy
- fifteen years of pharmacy fields-related experience
- four years of academic experience
- Nine years' experience as a laboratory instructor
- Two years of experience in pharmaceutical industry
- Substantial knowledge in microneedle-assisted phototherapeutics in the treatment of skin cancers, intradermal and transdermal drug delivery, hot-met extrusion technology
- Excellent Instrumental and Analytical skills
- Hands-on experience in statistical and data analysis software
- Strong interpersonal and supervisory skills

#### **Education**

Feb. '16- Feb. '18 **Ph.D., Pharmaceutical Sciences**  
**Minor and focus: Pharmaceutical Technology and Drug Delivery**  
Queens University Belfast, Belfast, United Kingdom.  
Thesis title: “Novel delivery of phototherapeutics using minimally invasive devices”.  
**Fulbright Scholarship, Middle East University, Amman, Jordan.**

- Sep. '12- Oct. '14 **M.Sc., Pharmaceutical Sciences, Thesis Track**  
Applied Science University, Amman, Jordan.  
Thesis title: "Characterization of processing and formulation parameters of hot-melt extruded Polyethylene oxide matrices for extended-release application".  
**Awarded degree with First Class Honours (GPA: 91.1 %)**  
**Rating: Distinction and Ranked as the TOP student at the summer semester 2013/2014.**
- Oct. '98- Sep. '02 **B.Sc., Pharmacy**  
Philadelphia University, Amman, Jordan.  
**Graduated with First Class Honours (GPA: 86.7 %)**  
**Rating: Distinction and Ranked as the second student at the summer semester 2001/2002.**

### **Research Interests**

- The design, development and industrial translation of novel systems for patient-focused administration of difficult-to-deliver drugs using microneedles
- The design and physicochemical characterisation of advanced polymeric drug delivery systems for intradermal and transdermal drug delivery, with a strong emphasis on improving therapeutic outcomes for patients
- The development of materials which interface with the body and provide enhanced functionality, such as drug delivery, Photoactive materials and Polymeric Medical Devices
- The development of novel technologies and targeted therapies for advanced healthcare solutions including anticancer therapeutics and nano delivery such as the delivery of gold nanoparticles
- Photodynamic and plasmonic photothermal therapies for the treatment of skin cancer
- Hot melt extrusion technology

### **Research Experience and Skills**

- Evaluation of polymeric-based MN arrays platforms for local and transdermal drug delivery and assess their impact on subsequent *in vitro* delivery and *in vivo* biodistribution
- Design, production and characterisation of novel polymeric long needles and control their physicochemical properties
- Design and fabrication of a range of needle's metal master templates and their corresponding silicone moulds

- Evaluation of the mechanical properties of needles upon insertion and performance of *in vitro* in-skin dissolution and recovery testing
- Fabrication, physicochemical characterisation and quantification of gold nanoparticles and optimization of their preparation methods
- Characterization of gold nanoparticles in terms of optical properties, shape, size and zeta-potential
- Evaluation of the integrity of gold nanorods as nano-heaters
- Irradiation of the hydrogel-GNRs composites *in vitro* and evaluate their relevant heating and integrity as nano-heaters
- The applicability of hot-melt extrusion technology in the design of extended release solid dosage forms
- Evaluation of the formulation parameters and hot-melt extrusion processing variables on HME processability and BCS class II drug release characteristics
- Hands on experience working with lab scale single-screw hot melt extruder
- Excellent Instrumental and Analytical skills, extensive working knowledge with a variety of physicochemical techniques, formulation equipments, UV-vis and fluorescence spectroscopy, dissolution, Diffusion, HPLC, *in vivo* bioimaging system, cryostat microtome, tissue lyser, Texture Analyser equipment, optical coherence microscopy, scanning electron microscopy, thermal analysis using differential scanning calorimeter (DSC) and thermogravimetric analysis (TGA), thermal imaging and measurements, gold sputtering and coating, laser irradiation using bench-top lasers, particle size and zeta-potential analysis
- Strong knowledge in SigmaPlot scientific data analysis and graphing software
- Hands-on experience in Statistical Package for social sciences (SPSS) software and Prism

## **Professional Experience**

### **Academic Experience**

- Jun. '18- present    **Assistant Professor in Pharmaceutical Technology and Drug Delivery**  
 Faculty of Pharmacy  
**Middle East University**. Amman, Jordan
- Taught the following pharmacy undergraduate courses:
    - Industrial Pharmacy
    - Pharmaceutical Technology
    - Advanced Pharmaceutical Technology
    - Drug Delivery Systems
    - Cosmetics
    - Seminar in Advanced Pharmaceutical Sciences
    - Industrial Pharmacy Laboratory

Mar. '15- Feb. '16 **Lecturer**  
Faculty of Pharmacy  
**Philadelphia University.** Amman, Jordan

- Taught the following pharmacy undergraduate courses:
  - Physical Pharmacy
  - Industrial Pharmacy
  - Pharmaceutics
  - Pharmaceutical Technology

Oct. '05- Mar. '15 **Laboratory Instructor**  
Faculty of Pharmacy  
**Philadelphia University.** Amman, Jordan

- Taught the following pharmacy undergraduate courses:
  - General Chemistry Laboratory
  - Pharmaceutical Analytical Chemistry Laboratories
  - Pharmaceutical Organic Chemistry Laboratories
  - Clinical Biochemistry Laboratory
  - Instrumental Analysis Laboratory
  - Pharmacognosy Laboratory
  - Pharmacognosy & Phytochemistry Laboratory
  - Pharmaceutics Laboratory
  - Pharmacology Laboratory
  - Physiology Laboratory
  - Anatomy Laboratory

### **Pharmaceutical and Industrial Experience**

May. '05- Sep. '05 **Dispensing Pharmacist**  
**Sport City Retail Pharmacy.** Amman, Jordan

Sep. '04- Mar. '05 **Regulatory Officer**  
Registration and Regulatory Affairs Section  
**Jo-River Pharmaceutical Industries.** Amman, Jordan

- Handled and coordinated with R&D, QC and QA departments the registration affairs in Gulf Cooperation Council
- Ensured compliance with Gulf Central Committee for Drug Registration (GCC. DR) requirements on stability testing of pharmaceutical products with regard to:
  - Shelf life specification
  - Release specification

- Primary batches
- Storage conditions
- Analytical testing
- Microbial testing
- Labeling/ Statement
- Stability report

Nov. '02- Mar. '04 **Formulator Pharmacist**

Research and Development Department

**Dar Al-Dawa Pharmaceutical Industries.** Amman, Jordan

- Developed hands on experience with pre-formulation studies
- Formulated oral solutions, suspensions, solutions for injection and powder mixtures
- Established raw materials and finished products In-House specifications and manufacturing directions
- Performed finished product stability studies at different storage conditions
- Gained comprehensive experience with formulation scale-up from laboratory scale through pilot scale ending with production scale
- Oversaw and assisted production employee in handling and implementing the preparations Master Formula
- Gained extensive working knowledge and experience in quality control and cGMP requirements, and ICH quality guidelines
- Acquired hands on experience on several relevant technical documentations and SOPs
- Acquired significant knowledge and working experience in olfactory sterile area
- Gained comprehensive working knowledge on analytical methods validation and verification
- Prepared full registration file for submission to the Jordanian Ministry of Health

### **Workshops Attended**

- 13<sup>th</sup> Jan. 2021; Micronrdle Patch Systems – Injections self-applied, LTS Lohmann Therapie-Systeme, Webinar.
- 9<sup>th</sup> Apr. 2020; Emerald Guide to Getting published online workshop, Emerald Publishing
- 17<sup>th</sup> Sep. 2019; Jordan's research priorities and agenda workshop, Clarivate Analytics, Amman, Jordan
- 8<sup>th</sup> – 9<sup>th</sup> Jan. 2019; Queen's University Belfast – Jordan Research Symposium in Healthcare, Pharma and Agri-Food, Amman, Jordan

- 10<sup>th</sup> – 13<sup>th</sup> Oct. '17, NILTG Personal Individual Licence (PIL B) competency Course, Agri-Food and Biosciences Institute, Veterinary Sciences Division, Belfast, UK
- 26<sup>th</sup> – 28<sup>th</sup> Jul. '16; Leadership Summer School Programme, William J Clinton Leadership Institute, Riddel Hall, Queen's University Belfast, UK
- 30<sup>th</sup> Jun. '16; Elsevier Publishing Campus, Author Workshop, Queen's University Belfast, UK
- Mar. '04- May. '04; Trainee in Out-patient Hospital Pharmacy, Specialty Hospital. Amman, Jordan
- ICDL (international computer driving license)

## **Membership in Professional Organizations**

- Jordanian Pharmacists Association

## **University Committees**

- Courses equalisation committee
- Scientific research committee
- Laboratory safety committee
- Quality assurance committee
- Student disciplinary committee
- Library committee

## **Publications**

1. Tekko, I.A., Chen, G., Domínguez-Robles, J., Thakur, R.R.S., **Hamdan, I.M.**, Vora, L., Larrañeta, E., McElroy, J.C., McCarthy, H.O., Rooney, M. and Donnelly, R.F., 2020. Development and characterisation of novel poly (vinyl alcohol)/poly (vinyl pyrrolidone)-based hydrogel-forming microneedle arrays for enhanced and sustained transdermal delivery of methotrexate. *International Journal of Pharmaceutics*, 586, p.119580.
2. Sanoufi, M.R., Aljaberi, A., **Hamdan, I.** and Al-Zoubi, N., 2020. The use of design of experiments to develop hot melt extrudates for extended release of diclofenac sodium. *Pharmaceutical development and technology*, 25(2), pp.187-196.
3. **Hamdan, I.M.**, Tekko, I.A., Matchett, K.B., Arnaut, L.G., Silva, C.S., McCarthy, H.O. and Donnelly, R.F., 2018. Intradermal delivery of a near-infrared photosensitizer using dissolving microneedle arrays. *Journal of pharmaceutical sciences*, 107(9), pp.2439-2450.

4. Donnelly, R.F., Singh, T.R.R., Larrañeta, E. and McCrudden, M.T. eds., 2018. *Microneedles for drug and vaccine delivery and patient monitoring*. John Wiley & Sons.

Chapter Title: Delivery of Photosensitisers and Precursors Using Microneedles; Mary-Carmel Kearney, Sarah Brown, **Iman Hamdan**, Ryan F. Donnelly

5. Cordeiro, A., **Hamdan, I.** and Donnelly, R., 2018, July. Polymer-based needles for safer administration of emergency drugs. In *2018 Controlled Release Society Annual Meeting & Exposition*.
6. Cordeiro, A., **Hamdan, I.** and Donnelly, R., 2018, June. Polymer-based needle arrays for safer drug administration. In *UKICRS symposium 2018*.
7. Cordeiro, A., **Hamdan, I.** and Donnelly, R., 2018, May. Development of polymeric needles for improved parental drug safety. In *5th International Conference on Microneedles*.
8. **Hamdan, I.M.** and Donnelly, R.F., 2017. Microneedle-assisted photodynamic therapy: Delivery of a NIR photosensitiser for the treatment of skin cancers. *Photodiagnosis and Photodynamic Therapy*, 100(17), p.A63.

## **Conferences**

1. Author/s (In Order): **I.M. Hamdan**, Ismaiel Tekko, R.F. Donnelly

Title: Microneedle-mediated intradermal delivery of redaporfin: Potential to enhance treatment of nodular basal cell carcinoma

Conference: The ASU Pharmacy Fourth International Conference

Country: Jordan

Date: Jan, 2019

2. Author/s (In Order): Ana S. Cordeiro, **Iman Hamdan**, Rayan F. Donnelly

Title: Development of polymeric needles for improved parenteral drug safety

Conference: The *Microneedle Conference*

Country: *Canada*

Date: May, 2018

3. Author/s (In Order): **IM Hamdan**, RF Donnelly

Title: Microneedle-assisted photodynamic therapy: Delivery of a NIR photosensitiser for the treatment of skin cancers

Conference: *PDT.PDD*

Country: France

Date: October, 2016

4. Author/s (In Order): **Iman Hamdan**, Ahmad Aljaberi

Title: Characterization of processing and formulation parameters of hot-melt extruded polyethylene oxide matrices for extended-release application

Conference: *ASU pharmacy First National Conference*

Country: Jordan

Date: December, 2014

## **References**

1- Professor Ryan Donnelly

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2- Dr. Ismaiel Tekko

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3- Dr. Kyle Matchett

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4- Dr. Ahmad Aljaberi

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