

Hossein Omidian

PhD, MSc, BSc

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PRIMARY POSITIONS

- Professor at Nova Southeastern University
- Principal Scientist at Abbott Laboratories
- Principal Scientist at Kos Pharmaceuticals
- Editor at Journal of Bioactive and Compatible Polymers
- Delegate at United States Pharmacopeia
- Research Fellow at Purdue University
- Department Chair at Iran Polymer Institute

PRIMARY PROFESSIONAL SKILLS

- *Drug Delivery Systems*
 - Drug Delivery in General
 - Over 15 years of active experience with developing advanced dosage forms.
 - 10 years of teaching professional and graduate level courses including “Physical Pharmacy”, “Pharmaceutics”, “Drug Delivery Systems and Technologies”, “Pharmaceutical Polymers”, “Pharmaceutical Excipients”
 - Invited co-author of several book chapters in oral drug delivery.
 - Primary inventor of 3 issued US patents on hydrogels in drug delivery.
 - Principal Investigator of several grants on novel drug delivery systems.
 - Well familiar with majority of drug delivery systems and technologies.
 - Co-authored the book chapter “Oral Targeted Drug Delivery Systems: Gastric Retention Devices”.
 - Co-authored the book chapter “Drug Delivery Systems and Targeting” in the 6th edition of Martin’s Physical Pharmacy and Pharmaceutical Sciences.
 - Co-authored the book chapter “Commercial Oral Controlled Release Solid Dosage Forms”.
 - Co-authored the book chapter “Oral Controlled Delivery Mechanisms and Technologies”.
 - Co-authored the book chapter “Mucoadhesive Drug Delivery Systems”.
 - Co-authored the book chapter “Polymers in Drug Delivery”.
 - Co-authored the book chapter “Polymers in Oral Drug Delivery”.
 - Abuse-Deterrent Pharmaceutical Dosage Forms (2010-present)
 - Six years of intensive and extensive research on prescription drug abuse and abuse deterrent formulations.
 - Holding 7 US Patent Applications, and 19 Invention Disclosures on technologies to deter prescription drug abuse.
 - Developed very effective technologies to deter abuse of active ingredient in immediate and extended release formulations.
 - Developed technologies that can safely and effectively deter opioid abuse under variety of abuse conditions including snorting, injection, oral ingestion assisted with alcohol, and oral multiple administrations.
 - Developed new techniques to evaluate deterrence potential of dosage forms claiming to be abuse-deterrent, supplementary tests to Tier I in-vitro abuse deterrence testing.
 - Served as consultant and expert in patent infringement and invalidation cases.
 - Over 15 peer-reviewed publications, and more than 70 conference presentations.

- As Principal Investigator, submitted three comprehensive proposals to the National Science Foundation, and the National Institute of Health.
 - Supervised four PhD students.
 - Gastro-Retentive Oral Drug Delivery Systems (2002-2006)
 - Five years of experience in developing gastro-retentive platforms to prolong gastric retention of drugs with narrow absorption window.
 - Developed several technologies and platforms that could potentially provide oral gastric retention.
 - Helped writing protocols, formulating, manufacturing supplies, and conducting in-vivo animal, stability, safety, acute toxicity, and human trial studies.
 - Closely worked with analytical, regulatory, quality control, quality assurance, and the clinical site to ensure successful implementation of studies.
 - Holding 2 US Patents, and several invention disclosures on safe and effective techniques to provide oral gastric retention.
 - Developed gastro-retentive platforms for immediate and sustained release delivery systems.
 - Developed gastro-retentive platforms for semi-solid dosage forms providing various release profiles
 - Dozens of publications and conference presentations.
- Diet Platforms to Treat Obesity (2005-2007)
 - Two years of intensive research on polymeric platforms that could offer sense of satiety (fullness) if orally ingested.
 - Developed safe and effective polymeric-based diet platforms.
 - Helped writing protocols, formulating, manufacturing supplies, and conducting in-vivo animal, stability, safety, acute toxicity, and human trial studies.
 - Closely worked with analytical, regulatory, quality control, quality assurance, and the clinical site to ensure successful implementation of studies.
 - Holding 1 US Patent Application, several invention disclosures, several peer-reviewed publications and presentations.
- Hydrogels
 - Hydrogels in General
 - Over 25 years of research experience in synthesis, characterization, and application of variety of synthetic and natural-based hydrogel systems intended in chemical, pharmaceutical and biomedical applications.
 - Hands-on experience in synthesis and characterization of hydrogels (solvent-responsive, pH-responsive, thermo-responsive, ion-responsive, cryogels) that can effectively absorb water, saline, blood, urine, alcohol, and moisture intended for agricultural, hygiene, water-treatment, pharmaceutical and biomedical applications.
 - Invited co-author of 6 book chapters “Hydrogels”, “Introduction to Hydrogels”, “Engineered High Swelling Hydrogels”, “Fast-Responsive Macro-porous Hydrogels”, “Superabsorbent Hydrogels”, and “Superporous Hydrogels for Drug Delivery Applications”.
 - Published over 50 peer-reviewed article and dozens of conference presentations.
 - Superdisintegrant Hydrogels (2010-present)

- Invented the use of different negatively charged starch-based and cellulose-based superdisintegrants as a powerful deterrent agent in abuse-deterrent formulations.
 - Invented the use of opioid-superdisintegrant complex as a durable and stable deterrent agent in abuse-deterrent formulations.
 - Developed a novel quantitative and qualitative technique to measure disintegrating power of superdisintegrants.
- Superporous hydrogels (2001-2002)
 - Invented new generation of superporous hydrogels intended for advanced drug delivery applications.
 - Holding 1 US patent, and dozens of publications and presentations.
 - Superabsorbent hydrogels (1991-2000)
 - Developed superabsorbent hydrogels for hygiene and agricultural applications.
 - Scaled up manufacturing of different grades of superabsorbents at 300 metric tons per year.
 - Supervised four master students in Polymer Engineering.
- *Characterization and Processing*
 - Well experienced in thermal analysis (e.g., DSC, DMTA, TGA), structural, chemical and physical analysis (e.g., NMR, IR/FTIR, UV-Visible, XRD, SEM, GC, HPLC), solid-state mechanical analysis (e.g., texture analyzer, mechanical tester), solution state flow analysis (e.g., viscometry and rheometry); majority of pharmaceutical analysis, testing, and manufacturing processes.
 - *Others*
 - Testifying Expert, Consulting Expert, Patent Litigation, Editorial.

EDUCATION

Ph.D.	Polymer Engineering	<u>BRUNEL UNIVERSITY</u> <i>Department of Chemistry, London, UK</i>	1993-1997
M.Sc.	Chemical Engineering <i>Majored in Polymer Engineering</i>	<u>TEHRAN POLYTECHNIC UNIVERSITY</u> <i>Department of Chemical Engineering, Tehran, Iran</i>	1987-1990
B.Sc.	Chemical Engineering <i>Majored in Polymer Engineering</i>	<u>TEHRAN POLYTECHNIC UNIVERSITY</u> <i>Department of Chemical Engineering, Tehran, Iran</i>	1983-1987

CURRENT APPOINTMENT

Professor	<u>NOVA SOUTHEASTERN UNIVERSITY</u> <i>College of Pharmacy Pharmaceutical Sciences Fort Lauderdale, USA</i>	2015- Present
Associate Editor	<u>JOURNAL OF BIOACTIVE AND COMPATIBLE POLYMERS</u> <i>A Sage Publication</i>	2010- Present

PAST APPOINTMENTS

Associate Professor	<u>NOVA SOUTHEASTERN UNIVERSITY</u> <i>College of Pharmacy Pharmaceutical Sciences Fort Lauderdale, USA</i>	2011-2015
Assistant Professor	<u>NOVA SOUTHEASTERN UNIVERSITY</u> <i>College of Pharmacy Pharmaceutical Sciences Fort Lauderdale, USA</i>	2007-2011
Principal Scientist	<u>ABBOTT LABORATORIES</u> <i>Formulation R&D Drug Delivery Technologies Fort Lauderdale, USA</i>	2006-2007
Principal Scientist	<u>KOS PHARMACEUTICALS, INC.</u> <i>Formulation R&D Drug Delivery Technologies Fort Lauderdale, USA</i>	2005-2006
Research Manager	<u>KOS PHARMACEUTICALS, INC.</u> <i>Formulation R&D Drug Delivery Technologies Fort Lauderdale, USA</i>	2004-2005
Senior Scientist	<u>KOS PHARMACEUTICALS, INC.</u> <i>Formulation R&D Drug Delivery Technologies Fort Lauderdale, USA</i>	2002-2003
Postdoctoral Fellow	<u>PURDUE UNIVERSITY</u> <i>College of Pharmacy Industrial & Physical Pharmacy (IPPH) West Lafayette, USA</i>	2001-2002
Assistant professor, Head of Department	<u>IRAN POLYMER INSTITUTE</u> <i>Center for Polymer Synthesis and Processing Tehran, Iran</i>	1996-2001
Editor, Assistant Editor	<u>IRAN UNIVERSITY PRESS</u> <i>Department of Chemistry Tehran, Iran</i>	1994-1999

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