Prof Dr Muhammad Sohail Arshad



HEC Approved supervisor
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https://scholar.google.com.pk/citations?user=2fIItYEAAAAJ&hl=en

Personal Profile

A self-motivated academic professional having PhD degree relating to process analysis and formulation development from a UK University. Trained, supervised and evaluated undergraduate and post-graduate researchers with various level of research experience. Collaborating research projects with different International organizations having research excellence. Awarded grants for different research projects relating to drug delivery. Twenty years of teaching experience in the subjects of Pharmaceutics at different institutions.

Research Experience

Supervised PhD & M.Phil. research projects at Department of Pharmacy Bahauddin Zakariya University Multan. (No. of PhD Students: 07, No. of M.Phil. Students: 37)

Leicester School of Pharmacy October 2010 to 2014

PhD thesis "Application of Through-Vial Impedance spectroscopy as a novel process analytical technology for freeze drying".

- A novel through-vial impedance measurement system was employed to define critical product parameters such as the glass transition, eutectic crystallization, phase separation, the measurement of product collapse and the rate and end point of primary drying. The impact of annealing temperature and hold time on the process efficiency was also recorded.

Formulation development programme in collaboration with an industry.

1. The project involved in solid state characterization, compatibility of active pharmaceutical ingredient (API) with excipients, characterization of liquid formulations, development of freeze drying protocols, packaging of dried

formulation, characterization of finished products, analysing and reporting the results).

Collaborative research project with Nottingham University, relating to the in-situ characterization of thermo-gelation of hydrogels.

2. Collaborating research at De Montfort University Leicester since 2014.
3. Collaborating research projects with University of the Punjab, Lahore, Pakistan.
4. Collaborating research projects with Gomal University, DI Khan, Khyber Pakhtunkhwa Pakistan.

Research Grants

1. 2023 Funding from Bahauddin Zakariya University Multan for project titled "Preparation and characterization of curcumin loaded polymeric micro material-based topical patch formulations for wound healing" **(Approx. worth Rs. 0.2 Million)**
2. 2022 Funding from Bahauddin Zakariya University Multan for project titled "Preparation and characterization of polymeric nanomaterial-based transdermal patch formulations for improved drug delivery" **(Approx. worth Rs. 0.4 Million)**
3. 2018 Focal Person of Mevlana Exchange Program approved by Turkish Government between Bursa Technical University, Bursa Turkey and Bahauddin Zakariya University, Multan Pakistan **(Approx. worth Rs. 3 Million)**
4. 2018 A research Project titled "Development of 3D Printed tablets for personalized delivery of Anti-histaminic drugs" awarded under NRPU by HEC Pakistan **(Rs 2.3 Million)**
5. 2018 A research Project Titled "Development and characterization of polymeric based microneedles, a novel approach for the delivery of biopharmaceuticals" awarded under NRPU by HEC Pakistan **(Rs 2.4 Million)**
6. 2017 HEC Travel Grant to present research titled "Polymeric Microneedles: a novel approach to skin permeability of Ceterizine Hydochloride" in APS GB (**Rs 0.252 Million**)
7. **2017** A method to determine the amount of carbon dioxide released from effervescent granules (**PKR 0.18768 Million**)
8. **2017** Development and characterization of sustained released gastroretentive microbeads of clarithromycin (**PKR 0.1632 Million**)
9. **2016** Transdermal Drug Delivery of Pharmaceuticals: A Microneedle Based Approach (**PKR 0.2 Million)**
10. **2016** Preparation and characterization of oral fast disintegrating tablets containing diclofenac sodium (**PKR 0.13 Million**)
11. **2015** Evaluation of flaxseeds mucilage as a tablet excipient using flurbiprofen as model a drug (**PKR 0.2 Million**)
12. **2014** Travel Grant to present a poster at a symposium titled Amorph-14 held at

Cambridge University, United Kingdom **GBP 1000/-**

13. **2009** Syed Yusuf Raza Gilani Foreign Scholarship for PhD Studies **USD 98400/-**
14. **1996-2000** Merit scholarship for securing marks in top 10 position B.Pharmacy **PKR 10,000/-** for three years

Research Students Supervised

PhD research projects supervised.

1. Qalander Khan (2015-19) Development and characterization of topical formulation of Dimenhydramine: In-vitro/ Ex-vivo/In-vivo evaluation
2. Shazia Batool (2015-19) Development and Characterization of Sustained Released Gastro Retentive Microbeads of Clarithromycin
3. Hassan Ahmad (2015-19) Preparation and characterization of in situ polymeric gels of Naproxen
4. Umair Jillani (2017-2022) Design and Evaluation of Agarose Based Buccal Films containing Zolmitriptan Succinate and Ondansetron HCl: Application of Physical and Chemical Enhancement Approaches
5. Rukhsana Batool (2017-2022) Preparation and characterization of sodium tripolyphosphate and glutaraldehyde crosslinked chitosan/guar gum hydrogel beads containing celecoxib: in vitro and in vivo evaluation
6. Shamaila Masood (2019-2024) Formulation Development and In vitro-In vivo Evaluation of Emulgel loaded with Leptadenia pyrotechnica extract
7. Saman Zafar (2021-2026) Preparation and characterization of antibiotic loaded polymeric microneedle patches for the treatment of biofilms

M.Phil. research projects Supervised

1. Iqra Ikram, (2014-16) Formulation development and Characterization of fast disintegrating tablets containing diclofenac sodium: The effect of Guar gum, Agar and Aloe gum on tablet disintegration
2. Muhammad Ayyub (2014-16) Formulation, Characterization and Stability Study of Amoxicillin Dry Suspension: Effect of Suspending Agents.
3. Muhammad Shakil (2014-16). Preparation and characterization of Miconazole Nitrate composite films fabricated from different fruit pectin and gelatin
4. Aman Abid (2015-17) Formulation development and characterization of Silver Sulphadiazine loaded hydroxy propyl cellulose
5. Munazza Kiran (2015-2017) Preparation and Characterization of Levofloxacin Gastro Retentive Tablets.
6. Aruba Khan (2015-17) Preparation and Characterization of Hydrochlorothiazide loaded Chitosan microparticles.
7. Samra Bukhari (2015-17) Evaluation of disease management in diabetic patients
8. Sana Hassan (2015-17), Preparation and characterization of Cetirizine Hydrochloride loaded polymeric based microneedles
9. Ayesha Ikram (2016-18) Solubility enhancement of Valsartan using soluplus (Polyvinyl Acetate- polyethylene glycol graft co polymer) by solid dispersion approach

10. Aqeel Shahzad (2016-18) Preparation and characterization of indomethacin films by ink-jet printing
11. Sameen Fatima (2017-19) Formulation Development and Characterization of Microneedle Patches Containing BCG Vaccine
12. Muhammad Farhan (2017-19) Preparation and Characterization of Platelet Rich Plasma Containing microgel Formulations
13. Muhammad Basit (2017-19) Preparation and Characterization of Gellan Gum and Hydroxy Propyl Methyl Cellulose based *In-situ* forming nasal gel containing Tamsulosin Hydrochloride
14. Nida Shafiq (2017-19) Preparation and Characterization of Oral Films Containing Carvedilol
15. Faryal Zubair (2017-19) Preparation and Characterization of *In-situ* Gel of Timolol Maleate
16. Saman Zafar (2018-20) Preparation and Characterization of transdermal patches containing Heparin
17. Aleema Tehreem Zahra (2018-20) Preparation and characterization of transdermal patches containing Macrolides
18. Sidra Maqbool (2018-20) Preparation and characterization of MMA based mucoadhesive buccal patch for the delivery of Nystatin
19. Saba Saeed (2018-20) Pharmaceutical potential of gelatin and sodium carboxymethyl cellulose mucoadhesive buccal films containing Miconazole Nitrate
20. Iqra Eisa (2018-20) Preparation and characterization of gastroretentive oral beads of gellan gum containing Fexofenadine Hydrochloride
21. Arwa Khan (2018-20) Fabrication and characterization of polymeric composites of montmorillonite loaded with Gentamycin
22. Farkhandah Tanveer (2018-2020) Formulation and characterization of cellulose based fast dissolving tablets containing Dimenhydrinate
23. Farwa Arooj (2019-21) Fabrication and characterization of Chitosan based molecular imprinted polymer of Hydrocortisone
24. Syeda Arooj Fatima (2019-21) Fabrication and characterization of flurbiprofen loaded chitosan-based films
25. Maliha Mujeeb (2019-21) Preparation and characterization of piroxicam loaded poly vinyl pyrollidone (PVP) nanofibers
26. Shafaq Gulfam (2019-21) Preparation and characterization of tetanus toxoid loaded patches for transdermal drug delivery
27. Saad Hussain (2021 – 2023) Transcutaneous delivery of viral vaccine using polymeric patches
28. Aqsa Ayub (2021-2023) Fabrication and charaterization of Miconazole nitrate loaded solid lipid microparticles by melt emulsification: A new approach for transdermal application
29. Hafiza Zunaira Khan (2021-2023) Preparation and evaluation of ivermectin lipidic base granules
30. Muhammad Hamza (2021-2023) Preparation, characterization and evaluation of ascorbic acid fibers
31. Rimsha Khan (2021-2023) Preparation and evaluation of alginate beads incorporated with Bacillus Clausii-A probiotic

32. Iqra Irshad (2021-2023) Preparation and characterization of flurbiprofen intercalated montmorillonite nanocomplexes for sustained release
33. Sana Mushtaq (2022-2024) Preparation and characterization of azithromycin loaded polymeric formulations for the treatment of bacterial biofilm
34. Yusra Nawal (2022-2024) Fabrication and characterization of Piroxicam loaded soluble starch microparticles by nanoprecipitation
35. Gul e rana (2022-2024) Preparation and characterization of miconazole nitrate loaded polymeric mats for dermal delivery
36. Hina Faheem (2023-2025) Preparation and characterization of macrolide loaded chitosan-based composite films for topical applications
37. Sara Sarwar (2023-2025) Electrospun Nanofibers containing SEDDS for optimal delivery of itraconazole

Technical skills

Formulation development, Freeze drying; freeze-drying-microscopy, differential scanning calorimetry, thermogravimetric analysis, FTIR, NIR, UV-visible spectroscopy, impedance spectroscopy, Zetasizer, Electrohydrodynamics, 3D printing, Inject printing of medicines, Microneedles

Education

1 **De Montfort University, Leicester, United Kingdom (Leicester School of Pharmacy)**

PhD in Pharmaceutical Technologies De Montfort University, Leicester, United Kingdom with thesis title "***Application of Through-Vial Impedance spectroscopy as a novel process analytical technology for freeze drying***"

2 University of the Punjab, Lahore Pakistan (University College of Pharmacy)

MPhil in Pharmaceutics 2007 University of the Punjab, Lahore, Pakistan Passed with 1st division.

B. Pharmacy 2002 University of the Punjab, Lahore, Pakistan Passed with 1st division.

Published Articles: 131 Total Impact factor 380 H-Index 30 Citations 3500

1. Hassan S, Rana SJ, Zafar S, Chohan TA, Khan Q, Abbas K, **Arshad MS**. Improved transcutaneous delivery of cetirizine hydrochloride for the treatment of post-chemotherapy alopecia: Poke and emulgel approach. **Pakistan Journal of Pharmaceutical Sciences**. 2026;39(12):3845-55.
2. Yousaf S, Zafar S, Bashir MM, Rana SJ, Mudassir J, Hussain A, Abbas N, Al-Ani E, **Arshad MS**, Ahmad Z. Preparation of artificial tears with in-situ gelling properties for the management of dry eye disease: efficient droplet administration by a 3D-printed device. **Therapeutic Delivery**. 2026:1-3.

3. Otele IM, Patel T, **Arshad MS**, Ahmad Z, Banu H, Singh N. Mesoporous Silica Nanoparticles: Insights into Property-Function Relationships and Their Toxicological Implications. **Journal of Cluster Science**. 2026;37(7):153.
4. Ahmad H, Rana SJ, Chohan TA, Iqbal H, Benziane R, Rasekh M, Zafar S, **Arshad MS**, Ahmad Z. Development of Sustained Release Chitosan/β-Glycerol Phosphate-Based Injectable Thermo-Gels Containing Naproxen Sodium: In-Vitro and In-Vivo Evaluation. **Pharmaceutical Research**. 2026:1-3.
5. Akhtar A, Zafar S, Singh N, Jones S, **Arshad MS**, Ahmad Z. Food allergen immunotherapy via electrospray coated microneedles-a potential transdermal therapy. **Journal of Drug Targeting**. 2026:1-26.
6. Khan WH, Khan IU, Munir R, **Arshad MS**, Irfan M, Usra, Zafar S, Rana SJ, Ali Shah SA, Khalid SH, Vandamme TF. Transdermal microneedle delivery of rivaroxaban and its inclusion complex for enhanced anticoagulant therapy. **RSC Advances**. 2026.
7. **Arshad MS**, Mushtaq S, Zafar S, Rana SJ, Chohan TA, Abbas K, Rajput AW, Benziane R, Iqbal H, Onaiwu E, Fei D. Iontophoretic-assisted wound-healing using azithromycin and nanoparticulate magnesium oxide embedded fiber coated films. **European Journal of Pharmaceutics and Biopharmaceutics**. 2026:115163.
8. Ahmad N, Jalil NA, Benziane R, Iqbal H, Rana SJ, AbuAin T, Al-Asiri A, Kola-Mustapha AT, **Arshad MS**, Ahmad Z. Emerging and Prospective Engineering Technologies Enabling Microneedle Based Vaccine Therapeutics. **AAPS PharmSciTech**. 2026;27(4):189.
9. Yilmaz E, Avci A, Sezer E, **Arshad MS**, Ahmad Z, Kucuk I. Enzyme-Loaded Liposomal Edible Hydrogel Films to Enhance Lactase Activity in Perline Mozzarella. **Gels**. 2026;12(4):343.
10. Akhtar A, Singh N, **Arshad MS**, Ahmad Z. Progress in allergen immunotherapy via advanced transdermal delivery routes. **Drug Discovery Today**. 2026:104628.
11. Sayed E, Ruparelia K, Zafar S, Faheem A, Fatouros D, **Arshad MS**, Singh N, Ahmad Z. Novel electrosprayed core-shell polyethyleneimine and phospholipids coated MSNs for Co-delivery of KAZ3 and MDR-1 siRNA for efficient chemotherapy in multidrug-resistant colon cancer. **European Journal of Pharmaceutics and Biopharmaceutics**. 2025:114838.
12. Chaudhery I, ur Rehman A, Shah FA, Ahmed N, **Arshad MS**, Siddiqui B, Elaissari A. Transdermal Microneedle Platform for Enhanced Delivery of Roflumilast Encapsulated in Poly-L-Lysine Glucose Coated Nanochocleates Targeting Multiple Sclerosis. **Journal of Drug Delivery Science and Technology**. 2025:107344.
13. Tariq M, Zafar S, Rana SJ, Hussain S, Chohan TA, Aleem A, Ahmad N, Jalil NA, AbuAin T, Alasiri A, **Arshad MS,** Ahmad Z. Micropiercing-Iontophoresis Mediated Transdermal Delivery of Celecoxib from Ethyl Cellulose and Polyethylene Glycol

based Electrospun Mats. **Journal of Drug Delivery Science and Technology**. 2025;23:107210.

14. Bal I, Macit M, Alasiri A, Namli OC, **Arshad MS**, Ahmad Z, Duman G, Kucuk I. Engineering Moxifloxacin-Encapsulated Liposome-Enriched Alginate Hydrogel Films. **Gels**. 2025;11(6):448.
15. Zafar S, Rana SJ, Hamza M, Hussain A, Abbas N, Ghori MU, **Arshad MS**. Advancements in transdermal drug delivery using microneedles: technological and material perspective. **Discover Pharmaceutical Sciences**. 2025;1(1):5.
16. Rasekh M, **Arshad MS**, Ahmad Z. Advances in Drug Delivery Integrated with Regenerative Medicine: Innovations, Challenges, and Future Frontiers. **Pharmaceutics**. 2025;17(4):456.
17. Ali A, Zafar S, Chohan TA, Rasekh M, Singh N, Fatouros DG, **Arshad MS**, Ahmad Z. Development and characterisation of co-axial electrosprayed curcumin-loaded mesoporous silica and polymer composite coated microneedles. **International journal of pharmaceutics**. 2025; 10;678:125722.
18. Zafar S, Akhtar A, Sayed E, Onaiwu E, **Arshad MS**, Ahmad Z. Vaccine formulation design: challenges and opportunities. **RSC Pharmaceutics**. 2025; 2, 490-516
19. Ali A, Zafar S, Rasekh M, Chohan TA, Pisapia F, Singh N, Qutachi O, **Arshad MS**, Ahmad Z. An Adaptive Approach in Polymer-Drug Nanoparticle Engineering using Slanted Electrohydrodynamic Needles and Horizontal Spraying Planes. **AAPS PharmSciTech.** 2024; 25(8), 1-22
20. Zafar S, Sayed E, Rana SJ, Rasekh M, Onaiwu E, Nazari K, Kucuk I, Fatouros DG, **Arshad MS**, Ahmad Z. Particulate atomisation design methods for the development and engineering of advanced drug delivery systems: A review. **International Journal of Pharmaceutics**. 2024; 666, 124771
21. Zafar S, Rana SJ, Sayed E, Chohan TA, Kucuk I, Nazari K, **Arshad MS**, Ahmad Z. Enhancing linezolid activity in the treatment of oral biofilms using novel chitosan microneedles with iontophoretic control. **Biomaterials Advances**. 2024; 164, 213995
22. **Arshad MS**, Hussain S, Zafar S, Rana SJ, Chohan TA, Hamza M, Nazari K, Ahmad Z. Transcutaneous delivery of dexamethasone sodium phosphate via microneedle-assisted iontophoretic enhancement: A potential therapeutic option for inflammatory disorders. **Pharmaceutical Research.** 2024; 41, 1183–1199
23. **Arshad MS**, Ayub A, Zafar S, Rana SJ, Muhammad SA, Aleem A, Onaiwu E, Nazari K, Chang M-W, Ahmad Z. Fabrication of miconazole nitrate solid lipid nanoparticle loaded microneedle patches for the treatment of Candida albicans biofilms. **RSC Pharmaceutics.** 2024; 1, 458-471
24. Gul S, Sridhar SB, Jalil A, Akhlaq M, **Arshad MS**, Sarwar HS, Usman F, Shareef J and Thomas S. Solid self-nanoemulsifying drug delivery systems of furosemide: In

vivo proof of concept for enhanced predictable therapeutic response. **Pharmaceuticals.** 2024; 17(4), 1-18

25. **Arshad MS**, Nazari K, Rana SJ, Zafar S, Uzair M and Ahmad Z. Dissolving Microneedle Patches as Vaccine Delivery Platforms. **British Journal of Pharmacy**. 2023; 8(2), 1-2
26. Masood S, **Arshad MS**, Khan HMS, Begum MY, Khan KUR. Encapsulation of *Leptadenia pyrotechnica* (Khip) extract in carbomer based emulgel for its enhanced antioxidant effects and its in vitro evaluation. **Gels**. 2023; 9(12), 1-18
27. **Arshad MS**, Hamza M, Zafar S, Rana SJ, Khan HMS, Chohan TA, Abbas K, Ahmad T and Ahmad Z. Preparation and characterization of ascorbic acid electrospun micromaterial loaded gel for topical applications. **Journal of Drug Delivery Science and Technology**. 2023; 89, 105104
28. Rana SJ, Zafar S, Shahzad A, Basit M, Mudassir J, Akhlaq M, Chohan TA, **Arshad MS**. Preparation of tamsulosin hydrochloride loaded mucoadhesive in situ gelling polymeric formulation for nasal delivery in geriatrics. **AAPS PharmSciTech**. 2023; 24, 1-12
29. Ijaz QA, Latif S, Khan SI, Rashid M, Afzal H, Jan N, Javaid MZ, Sarfaraz M, Hussain A, **Arshad MS**, Bukhari NI, Abbas N, Fabrication and evaluation of differential release bilayer tablets of clarithromycin and levofloxacin by 3D printing. **Journal of Pharmaceutical Innovation**. 2023; 18, 2145–2157
30. Ali A, **Arshad MS**, Khan M, Chang MW, Ahmad Z, Recent advances towards overcoming the blood-brain barrier. **Drug Discovery Today**. 2023; 28, 103735
31. Rashid A, Khalid SH, Irfan M, Asghar S, Rizg WY, Sabei FY, Alfayez E, Alkharobi H, Safhi AY, Hosny KM, **Arshad MS**, Khan IU. In vitro and in vivo evaluation of composite oral fast disintegrating film: An innovative strategy for the codelivery of ranitidine HCl and flurbiprofen. **Pharmaceutics**. 2023; 15(7), 1-24
32. Mudassir J, Raza A, Khan MA, Hameed H, Shazlay GA, Irfan A, Ran SJ, Abbas K, **Arshad MS**, Muhammad S, Jardan YAB. Design and evaluation of hydrophobic ion paired insulin loaded self micro-emulsifying drug delivery system for oral delivery. **Pharmaceutics**. 2023; 15, 1-15
33. Zafar S, **Arshad MS**, Rana SJ, Patel M, Yousef B, Ahmad Z. Engineering of clarithromycin loaded dissolving microneedle patches for the treatment of biofilms. **International Journal of Pharmaceutics**. 2023; 640, 123003
34. **Arshad MS**, Hussain S, Zafar S, Rana SJ, Ahmad N, Jalil NA, Ahmad Z. Improved transdermal delivery of rabies virus using iontophoresis coupled microneedle approach. **Pharmaceutical Research**. 2023; 40(8), 2039-2049
35. **Arshad MS**, Zafar S, Rana SJ, Nazari K, Chang MW, Ahmad Z. Fabrication of gentamicin sulphate laden stimulus responsive polymeric microarray patches for the treatment of bacterial biofilms. **Journal of Drug Delivery Science and Technology**. 2023; 84,104504.
36. Batool R, Mudassir J, Khan MA, Zafar S, Rana SJ, Abbas N, Hussain A, **Arshad MS**, Muhammad S. Fabrication and Characterization of Celecoxib-Loaded Chitosan/Guar Gum-Based Hydrogel Beads. **Pharmaceuticals**. 2023;16(4):554.

37. **Arshad MS**, Mujeeb M, Zafar S, Khan WQ, Patel M, Yousef B, Chang M-W, Sayed E, Ahmad Z, EHDA engineering of piroxicam-PVP components for pharmaceutical dosages, **Journal of Drug Delivery Science and Technology**, 2022;78:103927.
38. **Arshad MS**, Gulfam S, Zafar S, Jalil NA, Ahmad N, Qutachi O, Chang M-W, Singh N, Ahmad Z, Engineering of Tetanus toxoid-loaded polymeric microneedle patches, **Drug Delivery and Translational Research**, 2022;13(3):852-61
39. Shahzad A, **Arshad MS**, Zubair F, Shahzad S, Batool F, Fu Q, Development and Validation of Facile RP-HPLC Method for Simultaneous Determination of Timolol Maleate, Moxifloxacin Hydrochloride, Diclofenac Sodium and Dexamethasone in Plasma, Aqueous Humor and Pharmaceutical Products, **Journal of Chromatographic science**, 2022; 61(7), 678-687
40. Hussain A, Hussain F, **Arshad MS**, Abbas N, Nasir S, Mudassir J, Mahmood F, Ali E, Ibuprofen loaded centrifugally spun microfibers for quick relief of inflammation in rats, **Drug Development and Industrial Pharmacy**. 2022; 47(11), 1786-1793
41. **Arshad MS**, Mudassir J, Zafar S, Aleem A, Chan S-Y, Ahmad Z, Advances in drug delivery: A Multifaceted collaborative outcome, **Science Diplomacy Perspectives**, 2022 March, 54-57
42. Ahmad H, Chohan TA, Mudassir J, Mehta P, Yousef B, Zaman A, Ali A, Qutachi O, Chang M-W, Fatouros D, **Arshad MS**, Ahmad Z, Evaluation of sustained-release in-situ injectable gels, containing naproxen sodium, using in vitro, in silico and in vivo analysis, **International Journal of Pharmaceutics**. 2022;616(1)121512
43. **Arshad MS**, Kiran M, Mudassir J, Farhan M, Hussain A, Abbas N, Formulation, Optimization, in vitro and in-vivo evaluation of levofloxacin hemihydrate Floating Tablets, **Brazilian Journal of Pharmaceutical Sciences**. 2022;58(1):1-19
44. Murad S, Mudassir J, Faiz S, Zahra A, Usman F, Ahmad F, **Arshad MS**, Abbas N, Hussain A, Baig MMFA, Controlled release floating drug delivery system for proton pump inhibitors lansoprazole: In-vitro, In-vivo floating and pharmacokinetic evaluation, **Pakistan Journal of Pharmaceutical Sciences**, 2022;35(1):195-201
45. Jillani U, Mudassir J, **Arshad MS**, Mehta P, Alyassin Y, Nazari K, Yousef B, Patel M, Zaman A, Sayed E, Chang M-W, Ali A, Ahmad Z, Design and evaluation of agarose based buccal films containing zolmitriptan succinate: Application of physical and chemical enhancement approaches, **Journal of Drug Delivery Science and Technology**. 2021;69(1):103041
46. Ijaz QA, Latif S, Shoaib Q, Rashid M, **Arshad MS**, Hussain A, Bukhari NI, Riaz S, Abbas N, Preparation and Characterization of pH-Independent Sustained-Release Tablets Containing Hot Melt Extruded Solid Dispersions of Clarithromycin: Tablets Containing Solid Dispersions of Clarithromycin, **AAPS PharmSciTech**. 2021;22(8):1-12
47. **Arshad MS**, Zafar S, Yousef B, Alyassin Y, Ali R, AlAsiri A, Chang M-W, Ahmad Z, Elkordy AA, Faheem A, A review of emerging technologies enabling improved solid oral dosage form manufacturing and processing, **Advanced Drug Delivery Reviews**. 2021;178(1):113840
48. Nasir S, Hussain A, Abbas N, Bukhari NI, Hussain F, **Arshad MS**, Improved Bioavailability of Oxcarbazepine, a BCS class II drug by Centrifugal Melt Spinning: In-vitro and in-vivo Implications, **International Journal of Pharmaceutics**, 2021;605(3):120-775

49. Mehta P, Rasekh M, Patel M, Onaiwu E, Nazari K, Kucuk I, Wilson PB, **Arshad MS**, Ahmad Z, Chang M-W, Recent Applications of Electrical, Centrifugal, and Pressurised Emerging Technologies for Fibrous Structure Engineering in Drug Delivery, Regenerative Medicine and Theranostics, **Advanced Drug Delivery Reviews**. 2021;175(1):113823
50. Zafar S, Hassan S, Mudassir J, Hussain A, Abbas N, Latif S, Ali E and **Arshad MS**. Microneedle based transcutaneous delivery of low molecular weight heparin. **Pakistan Journal of Pharmaceutical Sciences**. 2021;34(3(Suppl)):1165-1170
51. Shoaib Q, Latif S, Ijaz QA, Afzal H, Siddique MI, **Arshad MS**, Hussain A, Bukhari NI, Abbas N, Solubility and dissolution rate enhancement of ibuprofen by cyclodextrin based carbonate nanosponges, **Pakistan Journal of Pharmaceutical Sciences**. 2021;34(3(Suppl)):1045-1055
52. Ali A, Zaman A, Sayed E, Evans D, Morgan S, Samwell C, Hall J, **Arshad MS**, Singh N, Qutachi O, Chang M-W, Ahmad Z, Electrohydrodynamic Atomisation Driven Design and Engineering of Opportunistic Particulate Systems For Applications in Drug Delivery, Therapeutics and Pharmaceutics, **Advanced Drug Delivery Reviews**. 2021;176(1):113788
53. Afzal H, Abbas N, Hussain A, Latif S, Fatima K, **Arshad MS**, Bukhari NI, Physicomechanical, stability, and pharmacokinetic evaluation of aceclofenac dimethyl urea cocrystals, **AAPS PharmSciTech**. 2021;22(2):1-13
54. Ijaz QA, Abbas N, Latif S, Hussain A, **Arshad MS**, Ali E, Rashid M, Sohail K, Riaz S, Bukhari NI, Development of a validated method for simultaneous quantification of clarithromycin and levofloxacin by high-performance liquid chromatography-diode array detector. **Acta Poloniae Pharmaceutica**. 2021;77(6):841-847
55. **Arshad MS,** AT Zahra, S Zafar, MH Zaman, I Kucuk, A Akhtar, MM Ayaz, M Maniruzaman, MW Chang, Z Ahmad, Antibiofilm Effects of Macrolide Loaded Microneedle Patches: Prospects in Healing Infected Wounds, **Pharmaceutical Research.** 2021;38(9):1-13
56. Ejaz A, Khalid H, Bukhari NI, Najma A, Hussain A, Abbas N, **Arshad MS**, Sajida P, Naureen S, Shaista Q, Abida Q, Determination of bergenin in different parts of Bergenia ciliata using a validated RP-HPLC method. **Natural Product Sciences**. 2021, 54-59
57. Khan Q, Shah SNH, **Arshad MS**, Usman F, Khalil R, Ul-Haq Z, Siddiqui FA, Hussain T, Yousaf AM, Rizvi SAA, Shahzad Y, Formulation and optimization of dimenhydrinate emulgels for topical delivery using response surface methodology. **Pakistan Journal of Pharmaceutical Sciences.** 2021;34(1):245-255
58. Latif S, Ijaz QA, Hameed M, Shoaib Q, Fatima K, Hussain A, **Arshad MS**, Abbas N, Improvement of Physico-mechanical and pharmacokinetic attributes of naproxen by cocrystallization with l-alanine, **Journal of Drug Delivery Science and Technology**. 2021;61(1):102236
59. Hussain A, Nasir S, Hussain F, Abbas N, Bukhari NI, **Arshad MS**, Mudassir J, Latif S, Ali A, Improved dissolution rate of oxcarbazepine by centrifugal spinning: in-vitro, in-vivo implications. **Proceedings**. 2021;78(1):7
60. Hussain A, Mahmood F, **Arshad MS**, Abbas N, Qamar N, Mudassir J, Farhaj S, Nirwan JS, Ghouri MU, Personalised 3D Printed Fast-Dissolving Tablets for

Managing Hypertensive Crisis: In-Vitro/In-Vivo Studies. **Polymers**. 2020;12(12):3057

61. Ali R, Mehta P, Monou PK, **Arshad MS**, Panteris E, Rasekh M, Singh N, Qutachi O, Wilson P, Tzetzis D, Chang M-W, Fatouros DG, Ahmad Z, Electrospinning/Electrospraying coatings for metal microneedles: a design of experiments (DOE) and Quality by Design (QbD) approach, **European Journal of Pharmaceutics and Biopharmaceutics**. 2020;156(1):20-39
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131. **Arshad MS** et al. Evaluation of antibiotic use behaviour in cold and flu amongst the students of Bahauddin Zakariya University Multan Pakistan. **Pak J Pharm** 2010; 20-23(1 & 2), 15-22.

Published Books and Laboratory Manuals

Manual of clinical Pharmacy for Pharm D Students Published in 2010 by Raaz Publishers Lahore

Published Book chapters

Mudassir J, Arshad MS, Bioinspied Nano-Formulations: Materials, Applications and Approaches in Drug Delivery. In book Drug Delivery using Nanomaterials, 2022 (pp. 85-108), CRC Press

Conference Presentations

1. Erayhan B, Anaklı D, Kucuk I, Macit M, Dumanlı G, Namlı O, Hamza M, **Arshad MS**. Microfluidic Fabrication of Graphene Oxide-Enriched Alginate Nanocomposite Hydrogels for Enhanced Porous Structure and Antibacterial Wound Dressings. The 1st International Online Conference on Gels, MDPI, 28 November 2025
2. **Arshad MS**, Nazari K, Rana SJ, Zafar S, Uzair M, Ahmad Z, Dissolving Microneedle Patches as Vaccine Delivery Platforms. 14th APS PharmSci International Conference 2023, September 05-07, 2023
3. **Arshad MS**, Zahra AT, Zafar S, Ahmad Z, Antibiofilm Effects of Macrolide Loaded Microneedle Patches: Prospects in Healing Infected Wounds, International Pharmaceutical Technology Symposium (IPTS) 2022 Online, February 21-23, 2022
4. **Arshad MS** Application of Polymeric based Microneedles for the transdermal delivery of Cell based drug substances (BCG) and hydrophilic drug substances Cetirizine Hydrochloride, IPCE 20 The Islamia University Bahawalpur. February 28, 2020.
5. **Arshad MS,** S Zafar, AT Zahra, Mishal Tariq Fabrication of Clarithromycin Loaded Polymeric Microneedle patches for antibiofilm activity Controlled released Society Virtual Conference June 29 – July 2, 2020
6. **Arshad MS**, Preparation and Characterization of Carvedilol Loaded HPMC Based Fast Dissolving Films Using Peizoelectric Inkjet Printing: Ex-vivo Buccal Permeation Studies Using Iontophoresis, Controlled Release Society CRS Annual Meeting and Exposition 21-24 July 2019 Valencia Spain.
7. **Arshad MS** Improved transdermal delivery of cetirizine hydrochloride using polymeric microneedles, Internation conference on Drug delivery, The University of Faisalabad, November 9, 2019
8. **Arshad MS** Presented research at International Symposium on Pharmaceutical Sciences (ISOPS-12) held at Ankara University, June 26-29, 2018
9. **Arshad MS,** The effect of formulation parameters and machine setting on the skin permeation of indomethacin loaded to films prepared by piezo-electric printing. 4th International Pharmacy Scientific symposium and Pharmaceutical Exhibition at University of central Punjab, Lahore May 11-12, 2018.
10. **Arshad MS,** Polymeric Microneedles: a novel approach to skin permeability of Cetirizine Hydrochloride presented at 1st National conference on recent advancement in pharmaceutical sciences, University of Sargodha, March 7-8, 2018

11. **Arshad MS,** Polymeric Microneedles: a novel approach to skin permeability of Cetirizine Hydrochloride 1st International Pharmaceutics Conference, Bahauddin Zakariya University, Multan February 11-12, 2018
12. **Arshad MS,** Hassan S, Hussain A, Abbas N, Nazari K, Ahmed Z; Polymeric Microneedles: a novel approach to skin permeability of Ceterizine Hydrochloride UK PharmSci September 5-7, 2017
13. Hussain A, Abbas N, **Arshad MS**, Study of okra gum in comparison with starch paste as a binder in naproxen sodium tablets UK PharmSci, Glasgow, September 05-7, 2016.
14. Shakil M, Uzair, Akhlaq M, **Arshad MS.** Extraction and characterization of pectin from mango peel. Pharmacy As Profession: Challenges and Opportunities in the new Scenario, Bara Gali, KPK Pakistan August 21-23, 2015
15. **Arshad MS**, Smith G, Polygalov E, Ermolina I 2014. An Application of Through Vial Impedance -Spectroscopy (TVIS) as a Temperature Measurement System during Freeze Drying: The Example of Lactose 3% w/v Solution, AAPS Annual meeting and exposition, November 2-6, 2014
16. **Arshad MS**, Smith G, Polygalov E, Ermolina I 2014. In-situ characterization of phase changes in lysozyme/trehalose solutions using through vial impedance spectroscopy, UK PharmSci, September 08-10, 2014.
17. **Arshad MS**, Smith G, Polygalov E, Ermolina I 2014. In-situ characterization of phase changes in lysozyme/trehalose solutions using through vial impedance spectroscopy for freeze drying cycle Amorph, July 14-16 2014.
18. **Arshad MS**, Smith G, Polygalov E, Ermolina I, Muthar K, Taylor J, Page T. 2013. In situ characterization of phase separation in PVP dextran solutions using impedance spectroscopy. AAPS, San Diego: AAPS Novemebr, 10th -14th 2013.
19. **Arshad MS**, Polygalov E, Ermolina I, Smith G. Study on the impact of annealing on the primary drying times using impedance spectroscopy. UKPharmSci, Edinburgh.UK September 2nd -4th , 2013
20. **Arshad MS**, Ermolina I, Polygalov E, Smith G. LyoDEA™ measurement of the glass transition of sucrose within a freeze-drying vial. Poster Presentation. UK-PharmSci, Nottingham UK, September, 12th -14th 2012.
21. **Arshad MS**, Ermolina I, Polygalov E, Smith G. In situ impedance measurement of mannitol crystallization during the lyophilisation cycle using LyoDEA™. Poster Presentation. UK-PharmSci, Nottingham UK, September, 12th -14th 2012.
22. **Arshad MS**, Mahboubian A, Stolnik S, Marlow ME, Smith G. Evaluation of thermo-gelation by impedance spectroscopy. Poster Presentation. UK-PharmSci, Nottingham UK, September, 12th -14th 2012.
23. Mahboubian A, Stolnik S, **Arshad MS**, Marlow M, Smith G. Novel methods for evaluating in-situ gelation using terahertz and dielectric spectroscopy. Poster

Presentation. UKICRS 2012 Drug delivery through the ages, Aston University, Birmingham, UK, May 2, 2012.

24. Smith G, **Arshad MS**, Ermolina I. Lyosense™. An evaluation of the impact of electrode design on the freezing onset times in the lyophilisation process. Poster Presentation. UK-PharmSci, Nottingham UK, 31st August- 2nd September 2011.

Meetings, Webinars and Conferences Attended

1. "COMSTECH webinar on advanced methods for structure determination of proteins and their complexes: Drug discovery for motor neuron disease to COVID-19" organized by Organized by OIC Ministerial Standing committee on Scientific and Technological corporation (COMSTECH), September 9, 2021
2. Training on "Collaboration among OIC member countries for promotion of research culture in medicines and vaccines through strengthening and upgrading the clinical trials", Organized by COMSTECH, DRAP and ICCBS, June 3, 2021
3. Webinar on "Scientific writing for the big journals" Organized by American chemical Society July 2020
4. Lyophilisation conference organized by SMI at Marriot Regents Hotel, London, July 7-8, 2014.
5. Seminar and process works Organized by OIC Ministerial Standing committee on Scientific and Technological corporation (COMSTECH)hops on continuous processing and QbD solid dosage pharmaceuticals organized by ISPE and De Montfort University, Leicester, September 11 & 13, 2014.
6. Quality by design symposium at De Montfort University, Leicester, April 11th 2013.
7. Quality by design symposium at De Montfort University, Leicester, April 9th 2014.
8. Webinar "PAT for Freeze-Drying: Determination of End Point of Primary Drying" by Sajal M Patel. SP Scientific, Oct 20, 2011.
9. Webinar "Practical Application of FD Microscopy in Product Thermal Characterization" by Ruben Nieblas SP Scientific Nov 28, 2011.
10. Webinar "Quality by Design and Scale-Up Issues in Freeze Drying: The role of controlled ice nucleation" by Michael Pikal SP Scientific April 7, 2011.
11. Webinar "Lyophilization Cycle Scale Up: From Development to Commercial Manufacturing" by Serguei Tuchessalov SP Scientific, April 20 2011.
12. Webinar "The Role and Implications of QbD In Topical/transdermal Drug Development Process" AAPS Feb 6, 2014.

Professional Experience

- Sixteen (16) years teaching Pharmaceutics **Bahaudin Zakariya University,** Multan, Pakistan

Worked as lecturer Pharmaceutics for 07 years

Worked as assistant Professor Pharmaceutics 02 years

Worked as Associate Professor Pharmaceutics 04 years

Working as Professor from January 2021

involved in the lecturing and lab experiments of different modules in pharmaceutics including pharmaceutical dosage forms, pharmaceutical technology

- Three (3) years as Technical Demonstrator at **De Montfort University** for undergraduate practical
  compounding of pharmaceutical formulations
  preparation of cosmetic products
- Two (2) years teaching experience as visiting lecturer at **Lahore college of Pharmaceutical Sciences**, Lahore.
  involved in the lecturing of different modules in pharmaceutics including pharmaceutical dosage forms, Pharmacy practice and physical pharmacy

Professional Experience

- Worked as Master Trainer of healthcare professionals at WHO (World Health Organization)
- Worked as Pharmacist at Fazal Din and Sons, Lahore, Pakistan from August 2002 to May 2003.
- Worked as Pharmacist at Government Model Pharmacy, The children's Hospital and Institute of Child health Lahore, Pakistan from July 2003 to Jan 2008.

Academic Administrative Experience

- Visiting academic, University of Manchester, United Kingdom
- Peer reviewer of several international journals such as International Journal of Pharmaceutics, Journal of Drug Delivery Science and Technology, Acta Biomaterila, Colloid and Surfaces B: Biointerfaces, PLos One, AAPS PharmSciTech, DARU Journal of Pharmaceutical Sciences
- Technical expert of selection board Punjab Public Service Commission
- Technical reviewer of NRPU (National Research Program for Universities) under HEC
- Director Scholarship, Bahauddin Zakariya University Multan
- Chairman Admission Committee Faculty of Pharmacy, Bahauddin Zakariya University, Multan
- Chairman Admission Committee Department of Pharmaceutics, Bahauddin Zakariya University, Multan
- Chairman Medical Committee, Bahauddin Zakariya University Multan

- Secretary Research Ethics Committee, Bahauddin Zakariya University Multan
- Incharge examination Faculty of Pharmacy, Bahauddin Zakariya University Multan
- Warden Boys Hostel Usman Hall at Bahauddin Zakariya University, Multan.
- Superintendent Boys Hostel Usman Hall at Bahauddin Zakariya University, Multan.
- Program Coordinator for MPhil Pharmaceutics Program Bahauddin Zakariya University Multan.
- Secretary Admission Committee Faculty of Pharmacy, Bahauddin Zakariya University, Multan
- Secretary Departmental Purchase Committee, Department of Pharmacy, Bahauddin Zakariya University, Multan
- Member Halls Council, Bahauddin Zakariya University, Multan
- Member Department Examination Committee, Department of Pharmaceutics, Faculty of Pharmacy, Bahauddin Zakariya University, Multan.
- Member Departmental Purchase Committee Department of Pharmaceutics Bahauddin Zakariya University, Multan
- Member Board of Studies at Faculty of Pharmacy, Bahauddin Zakariya University Multan
- Member Board of Studies, Department of Pharmaceutics, Bahauddin Zakariya University, Multan
- PhD examiner at Islamia University Bahawalpur, Pakistan
- PhD examiner at Gomal University, Dera Ismail Khan, Khyber Pakhtun Khwah Pakistan
- PhD Examiner at Government College University, Faisalabad
- M.Phil. Examiner at Islamia University Bahawalpur, Pakistan
- M.Phil. Examiner at University of Faisalabad, Pakistan.
- M.Phil. Examiner at University of the Punjab, Lahore.
- M.Phil. Examiner at University of Sargodha, Sargodha.
- M.phil. Examiner at Government College University Faisalabad
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- Examiner for Pharm D course at University of the Punjab, Lahore.
- Examiner for Pharm D course at University of Sargodha, Sargodha.
- Examiner for Pharm D Government College University, Faisalabad
- Examiner for Pharm D Gomal University, Dera Ismail Khan, KPK, Pakistan

Memberships

- Member National Curriculum Review Committee HEC for Pharm-D program
- Member Provincial Quality Control Board
- Member University Ranking committee, PHEC

- Convener Board of Studies, Bahauddin Zakariya University, Multan
- Member Board of Faculty, Bahauddin Zakariya University, Multan
- Member Research Project Evaluation Committee, Bahauddin Zakariya University, Multan
- Member Board of Studies, Emerson University, Multan
- Member Board of Faculty, University of Lahore, Lahore
- Member Board of Faculty, University of Sargodha, Sargodha
- Member Board of Studies, Government College University, Faisalabad
- Member Board of Studies, Hazara University, Mansehra
- Member University Ranking Committee, Punjab Higher Education Commission (PHEC), Lahore

Reference

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