

Dr. Aneela Sabir

Email: aneela.pet.ceet@pu.edu.pk

dr.aneelasabir@gmail.com

Chemical Engineer with an experience of more than ten (**10**) years in teaching, R&D, pressure vessel and heat exchanger designing & fabrication. Currently, I am a part of University of the Punjab as **Assistant Professor (BPS-19)**, teaching courses to MPhil. students of Polymer Engineering & Technology and also managing departmental administrative activities covering all matters.

SCHOLASTIC RECORD

- **Ph. D Chemical Engineering** **2010-2016**
Institute of Chemical Engineering and Technology, University of the Punjab, Lahore, Pakistan
- **M.Sc. Chemical Engineering** **2006-2008**
Institute of Chemical Engineering and Technology, University of the Punjab, Lahore, Pakistan
- **B.Sc. Chemical Engineering** **2002-2006**
Institute of Chemical Engineering and Technology, University of the Punjab, Lahore, Pakistan
- **Diploma in Environmental Law** **2013-2014**
Punjab University Law College, University of the Punjab, Lahore, Pakistan
- **Diploma in Intellectual Property Law** **2017-2018**
Punjab University Law College, University of the Punjab, Lahore, Pakistan

EDUCATIONAL THESIS

1. **Composite Membranes for Engineered Osmosis Desalination Process** (Ph.D Research Topic)
2. **“COD Removal by Advance Oxidation Processes (AOPs) from Textile Wastewater”** This study is mainly focused on the removal of COD from textile industry effluent by using advanced oxidation processes (AOP s), which include

Ozonation, Hydrogen peroxide (H₂O₂), Fenton's process. All experiments were performed in a laboratory scale setup. (Research Project; M.Sc Chemical Engineering Thesis)

3. Plant Design Report on "**Production of 100MTon/Day of Styrene from Methylbenzene by SMART (Styrene Monomer Advance Reactor Technology) Process.**".The project consisted of the thorough understanding of SMART process, unit process and unit operations involved in its flow sheet. Based on the assumption that we have to design a plant having final capacity of 100 MTPD of styrene following steps were done:

- Heat balance around the whole flow sheet of SMART process
- Mass balance around the whole flow sheet of SMART process

Based on the values obtained from heat and mass balance, process design and sizing of the reactors. Distillation columns, separator, kettle reboiler and pump rating along with instrumentation and control of main equipment was done. (B.Sc Chemical Engineering Final Project Report)

4. **Synthesis of Ferric Ammonium Citrate.** (Process Project; B.Sc Chemical Engineering)

PROFESSIONAL EXPERIENCE

- **Assistant Professor** **Nov 2016- To date**
Department of Polymer Engineering and Technology, University of the Punjab
- **Lecturer** **Nov 2011- Nov 2016**
Department of Polymer Engineering and Technology, University of the Punjab
- **Research Scholar** (under HEC-IRSIP Program) **Feb.2015–Aug.2015**
Georgia Institute of Technology, Atlanta, Georgia (USA)
- **Research Scientist** **Oct.2010–Nov 2011**
Department of Polymer Engineering and Technology, University of the Punjab
- **Research Scientist** **July 2009 – July 2010**
Ministry of Science and Technology, Pakistan.
- **Design & Development Engineer** **July 2007 – July 2009**
DDFC (Pvt. Ltd.) Design Development and Fabrication Company, Mechanical design of Distillation Column, Heat Exchangers, and Storage Tanks.
- **Trainee Design Engineer** **July 2006 – July 2007**
DDFC (Pvt. Ltd.) Design Development and Fabrication Company.

- **Internship Program**

July 2004 – Aug 2004

Packages Limited. Main Department of Work was R&D, “Flexible Packaging”

INTERNATIONAL PUBLICATIONS

Total Impact Factor

(90.347)

- 1) Decoration of open pore network in Polyvinylidene fluoride/MWCNTs with chitosan for the removal of Reactive Orange 16 dye. Maria Wasim, Sadia Sagar, Aneela Sabir, Muhammad Shafiq, Tahir Jamil. **Carbohydrate Polymers (I.F=5.130).**
- 2) Fabrication and performance characterization of novel zinc oxide filled cross-linked PVA/PEG 600 blended membranes for CO₂/N₂ separation. Muhammad Rizwan Dilshad, Atif Islam , Aneela Sabir , Muhammad Shafiq , Muhammad Taqi Zahid Butt , Aamir Ijaz , Tahir Jamil. **Journal of Industrial and Engineering Chemistry. (I.F=4.421).**
- 3) **Aneela Sabir**, Wail Falath, Karl I. Jacob, Muhammad Shafiq, Nafisa Gull, Atif Islam, Muhammad Azeem Munawar, Saba Zia, Shahzad Maqsood Khan, Amir Shafeeq, Muhammad Taqi Zahid Butt, Tahir Jamil. Integrally skinned nano-cellular crosslinked asymmetric thin films infused with PEO-PPO-PEO block copolymer/ZnO-NPs for desalination using sea salt. **Materials Chemistry and Physics, Volume 183, 1 November 2016, Pages 595-605. (I.F= 2.283).**
- 4) **Aneela Sabir**, Shafiq M, Islam A, Jabeen F, Shafeeq A, A Ahmad, Butt MTZ, Jacob KI, Jamil T Conjugation of silica nanoparticles with cellulose acetate/polyethylene glycol 300 membrane for reverse osmosis using MgSO₄ solution. **Carbohydrate Polymers 136 (2016) 551–559 (I.F=5.130).**
- 5) **Aneela Sabir**, Shafiq M, Islam A, Sarwar A, Dilshad MR, Shafeeq A, Butt MTZ, Jamil T Fabrication of tethered carbon nanotubes in cellulose acetate/polyethylene glycol-400 composite membranes for reverse osmosis **Carbohydrate Polymers 132 (2015) 589–597 (I.F=5.130).**
- 6) **Aneela Sabir**, Islam A, Shafiq M, Shafeeq A, Butt M. T. Z, Ahmad N. M, Sanaullah K, Jamil T Novel polymer matrix composite membrane doped with fumed silica particles for reverse osmosis desalination **Desalination 368 (2015) 159–170 (I.F=5.905).**

- 7) Wail Falath, **Aneela Sabir**, Karl I. Jacob. Novel reverse osmosis membranes composed of modified PVA/Gum Arabic conjugates: Biofouling mitigation and chlorine resistance enhancement. **Carbohydrate Polymers, Volume 155, 2 January 2017, Pages 28-39. (I.F=5.130)**
- 8) Maria Wasim, **Aneela Sabir**, Muhammad Shafiq, Atif Islam, Tahir Jamil. Preparation and characterization of composite membrane via layer by layer assembly for desalination. **Applied Surface Science** 19 October 2016. **(I.F=3.387)**.
- 9) Gull N, Khan SM, Islam A, Zia S, Shafiq M, **Aneela Sabir** , Munawar MA, Butt MTZ, Jamil T Effect of Different Oxidizing Agents on Polyaniline/Single Walled Carbon Nanotube Composites synthesized via Ultrasonically Initiated in-situ Chemical Polymerization **Materials Chemistry and Physics (2016) 1-8 (I. F =2.283)**.
- 10) Islam A, Yasin T, Gull S, Khan SM, Munawar MA, Shafiq M, **Aneela Sabir**, Jamil T Evaluation of selected properties of biocompatible chitosan/poly (vinyl alcohol) blends **International Journal of Biological Macromolecules** 82 (2016) 551–556 **(I.F=3.671)**.
- 11) Islam A, Yasin T, Akhtar M. J. Imran Z, **Aneela Sabir**, Sultan M, Khan SM, Jamil T Impedance spectroscopy of chitosan/poly(vinyl alcohol) film **Journal of Solid State Electrochemistry** DOI:10.1007/s10008-015-3082-6 **(I.F 2.316)**.
- 12) Islam A, Imran Z, Yasin T, Gull N, Khan S M, Shafiq M, **Aneela Sabir**, Munawar M A, Raza MH, Jamil T An investigation of AC impedance and dielectric spectroscopic properties of conducting chitosan-silane crosslinked-poly (vinyl alcohol) blended films **Materials Research (2015) (I.F=0.634)** 10.1590/1516-1439.043715; Page 1-8.
- 13) Islam A, Yasin T, Rafiq M. A., Tahir H. Shah, **Aneela Sabir**, Khan SM, Jamil T. In-situ Crosslinked Nanofiber Mats of Chitosan/Poly(vinyl alcohol) Blend: Fabrication, Characterization and MTT Assay with Cancerous Bone Cells **Fibers and Polymers** 16(9) (2015) 1853-1860 **(I.F=1.113)**.
- 14) Islam A, Yasin T, **Aneela Sabir**, Khan SM, Sultan M, Shafiq M, Khan AU, Jamil T High-temperature electrical properties of silane cross-linked chitosan/poly(vinyl alcohol) membrane: thermal, mechanical and surface characterization **e-Polymers** 15(4) (2015) 255–261 **(I.F=0.949)**.
- 15) **Aneela Sabir**, Shafiq M, Islam A, Khan SM, Jamil T, Zahid MT, Shafeeq A, Shahzad A, Bhatti AS, Habib Y, Behzad S and Jabeen S Influence of polyethylene glycol 600 on

- cellulose acetate membranes for reverse osmosis desalination **Polymer Research Journal 9(2) (2015) 291-302 (Nova Publishers).**
- 16) Khan SM, Gull N, Munawar MA, Islam A, Zia S, Shafiq M, **Aneela Sabir**, Awais SM, Butt MA, Butt MTZ, Jamil T. 2D Carbon Fiber Reinforced High Density Polyethylene Multi-layered Laminated Composite Panels: Structural, Mechanical, Thermal and Morphological Profile **Journal of Materials Science & Technology (I.F= 2.764).**
 - 17) Younus H Khana, Atif Islam, Afsheen Sarwar, Nafisa Gull, Shahzad M Khan, Muhammad A Munawar, Saba Zia, **Aneela Sabir**, Muhammad Shafiq, and Tahir Jamil. Novel green nano composites films fabricated by indigenously synthesized graphene oxide and chitosan. **Carbohydrate Polymers (2016) (I.F=5.130).**
 - 18) Muhammad Azeem Munawar, Shahzad Maqsood Khan, Nafisa Gull, Atif Islam, Muhammad Shafiq, Muhammad Taqi Zahid Butt, Tahir Jamil. Fabrication and characterization of novel zirconia filled glass fiber reinforced polyester (GFRP) hybrid composites. **Journal of Applied Polymer Science (2016) (I.F = 1.860)**
 - 19) Adnan Ahmad, Fahad Jamshed, Tabinda Riaz, Sabad-e- Gul, Sidra Waheed, **Aneela Sabir**, Adnan Alhathal AlAnezi, Muhammad Adrees, Tahir Jamil. Self-sterilized composite membranes of cellulose acetate/polyethylene glycol for water desalination. **Carbohydrate Polymers**, Available online 28 April 2016. **(I.F=5.130).**
 - 20) Wail Falath, **Aneela Sabir**, Karl I. Jacob. Highly improved reverse osmosis performance of novel PVA/DGEBA cross-linked membranes by incorporation of Pluronic F-127 and MWCNTs for water desalination. **Desalination, Desalination, Volume 397, 1 November 2016, Pages 53-66. (I.F=5.905).**
 - 21) Atif Islam, Tariq Yasin, Nafisa Gull, Shahzad Maqsood Khan, **Aneela Sabir**, Muhammad Azeem Munawwar, Muhammad Shafiq, Tahir Jamil, Muhammad Hamid Raza. Fabrication and performance characteristics of tough hydrogel scaffolds based on biocompatible polymers. **International Journal of Biological Macromolecules, Volume 92, November 2016, Pages 1-10. (I.F=3.671).**
 - 22) **Aneela Sabir**, Wail Falath, Karl I. Jacob, Muhammad Shafiq, Muhammad Azeem Munawar, Atif Islam, Nafisa Gull, Muhammad Taqi Zahid Butt, Khairuddin Sanaullah, Tahir Jamil. Hyperbranched polyethyleneimine induced polycationic membranes for improved fouling resistance and high RO performance. **European Polymer Journal**, Volume 85, December 2016, Pages 266-278. **(I.F= 3.658)**
 - 23) Muhammad Shafiq, **Aneela Sabir**, Shahzad Maqsood Khan, Atif Islam, Nadir

Hussain, M.Taqi Zahid Butt, Tahir Jamil. Development and performance characteristics of silane crosslinked poly(vinyl alcohol)/chitosan membranes for reverse osmosis. **Journal of Industrial and Engineering Chemistry. (I.F=4.421).**

- 24) Maria Wasim, Aneela Sabir, Muhammad Shafiq, Atif Islam, Mudassar Azam, Tahir Jamil. Mixed matrix membranes: Two-step process modified with electrospun (carboxy methylcellulose sodium salt/sepiolite) fibers for nanofiltration. **Journal of Industrial and Engineering Chemistry. (I.F=4.421).**
- 25) Adnan Ahmad, Fahd Jamshaid, Muhammad Adrees, Sadia Sagar Iqbal, Aneela Sabir, Tabinda Riaz, Hira Zaheer, Atif Islam, Tahir Jamil. Novel Polyurethane/Polyvinyl chloride-co-vinyl acetate crosslinked membrane for reverse osmosis (RO). **Desalination, 420 (2017) 136–144. (I.F=5.905).**

Books/Books Chapter Published Books:

- Maria Wasim, **Aneela Sabir**, Muhammad Shafiq, Atif Islam, Tahir Jamil; **Modification of Polysulphone membrane via Layer by Layer Assembly**; ISBN-13:978-3-330-03025-1, ISBN-10:3330030259, EAN:9783330030251, LAP LAMBERT Academic Publishing, Omni Scriptum Ara Pers GmbH, Germany.

Book Chapter

- **Aneela Sabir**, Maria Wasim, Muhammad Shafiq, Tahir Jamil " **Electrospinning: A fiber fabrication technique for water purification**" published by Elsevier (Submitted).
- **Aneela Sabir**, Maria Wasim, Muhammad Shafiq, Tahir Jamil " **Carbon nanotubes and graphene oxide membranes for desalination**" published by Elsevier (Submitted).

UNIVERSITY/HEC PROJECTS: ENGINEERING

- **Fabrication Of Adsorptive Membrane System For The Removal Of Heavy Metal Ions From Industrial Wastewater** (HEC Startup Research Grant Program, Fiscal Year 2016-17, **0.5 Million Rs**)
- **Nanofiltration membrane as selective layer for desalination.** (University of the Punjab, Lahore, Research Project Grant for the Fiscal Year 2015-16, **0.125 Mill Rs**)
- **Waste water treatment by using polymeric reverse osmosis membrane.**

(University of the Punjab, Lahore, Research Project Grant for the Fiscal Year 2013-14, **0.125 Mill Rs**)

- **Textile Wastewater treatment by using polymeric membrane via nanotechnology** (University of the Punjab, Lahore, Research Project Grant for the Fiscal Year 2012-13, **0.125 Mill Rs**)
- Working with the Principal Investigator in the project **(HEC-USAID) of “Development of Innovative Technical and Medical Textile Products”** at the Department of Polymer Engineering and Technology, University of the Punjab, Lahore.

INSTRUMENTS TRAINING FROM USA (Georgia Institute of Technology)

Got expertise and trainings of equipment from USA including

- Fourier Transform Infra-red Spectrophotometer **(FTIR)**
- Differential Scanning Calorimeter **(DSC)**
- Thermo gravimetric analyzer **(TGA)**
- Thermo mechanical Analyzer **(TMA)**
- Dynamic Mechanical Analyzer **(DMA)**
- X-ray Diffraction **(XRD)**
- Rheometer
- Universal Testing Machine **(UTM)**
- Scanning electron microscope **(SEM)**
- Atomic Force Microscope **(AFM)**
- Contact Angle Analysis

SUBJECTS TAUGHT:

Teaching M. Phil Polymer Engineering & Technology Course Work

- Membrane Science and Applications
- Polymer synthesis and characterization
- Nanomaterials and its Applications
- Advance Polymers

- Polymer Process Technologies
- Bio Materials
- Polymer Process Technologies
- Polymer Characterization Instruments
- Polymer Rheology and Processing Fundamental of Polymer Sciences
- Process and Design Rheology and Processing (Lab)
- Polymer Synthesis and Characterization (Lab)

INTERNATIONAL /NATIONAL CONFERENCES

- Participated in **“World Quality Day”** University of the Punjab, Lahore (8th February 2017)
- 4th In-Service Faculty Training program (21-25 November, 2016) on the Modules of **Patent System of Pakistan and Patent Filing and Communication Skills**, University of the Punjab, Lahore.
- Participated in **25th National and 13th International Chemistry Conference** 2014 held at Institute of Chemistry, University of the Punjab, Lahore.
- Participated in **5th Symposium on Engineering Science**, 2nd April 2014, ICET, University of the Punjab, Lahore.
- Participated in International **Workshop on sustainable Energy and Membrane System for Desalination and water reuse**, 10-11 December 2013, NUST, Islamabad.
- Influence of polyethylene glycol 600 on cellulose acetate membranes for reverse osmosis desalination process.” **Malaysia (International Symposium on Advanced Polymeric Materials, Kuala Lumpur, Malaysia) May 2014.**
- Participation in a 3rd **International Symposium on Biomedical Materials: Recent Advances and Challenges. Interdisciplinary Research Center In Biomedical Materials**, CIIT Lahore King Edward Medical University & De’montmorency College Of Dentistry
- Participation in a **National Seminar on Engineering Materials & their performance**, University of the Punjab, Lahore
- Participation in a workshop of **Cleaner Production in Textile (CPI & PERT).**
- Participation in Seminar of **Modern Skills in Management.**
- Participation in PIChE-IEP **1st International Chemical Engineering Congress.**
- Participated in Chromatography Techniques & Sample Preparation Seminar by Agilent

Technologies.

SHORT COURSES

- **2nd In-Service Faculty Training Program by HEC** in University of the Punjab, Lahore.
- **Porous Carbon Materials & Polymer Fibers Composite.** PIEAS, Nilore Islamabad.
- **ISO 9001:2000 Quality Management System.** University of the Punjab, Lahore.
- **Communication Skill Development Course** from Institute of Chemical Engineering and Technology.

MPhil Students Supervised/Ongoing Ph.D students:

- Supervised **10 MPhil students** of the Department of Polymer Engineering and Technology (DPET), University of the Punjab (**Reverse Osmosis Membranes, Nanofiltration Membranes, Mixed Matrix and Hybrid Membrane systems, nanofibers, Electrospinning**).
- Co-supervised **03 M. Phil students** of the Department of Polymer Engineering and Technology (DPET), University of the Punjab.
- Dealing with **06 PhD students** of DPET, PU for their PhD research work doing project on reverse osmosis, pervaporation, gas separation and removal of heavy metal ions from Industrial wastewater.

Awards and Distinctions:

- **Incentive award winner 2015**, University of the Punjab, Pakistan.
- **Judge for the evaluation of oral and posters presentations at Georgia Institute of technology, USA.**
- **Judge at 6th Invention to Innovation summit 2017**, University of the Punjab, Pakistan.
- **Won "Technology Award" 2017**, University of the Punjab, Pakistan.
- **Focal Person, Chief Minister and Prime Minister Laptop Distribution Scheme**, Department of Polymer Engineering & Technology, University of the Punjab.
- **Ranked 7th number among the more productive young scientists of Pakistan in Engineering Sciences (Under 40)**, Pakistan Council for Science and Technology, Islamabad.
- **"Award of Excellence" for the poster in Medtex 2017 conference** on

Characterization of Polyvinyl alcohol and cellulose acetate films and their evaluation for wound dressing application.

RESEARCH AREA

- Reverse Osmosis/pervaporation for desalination and other separation purposes
- Gas separation membranes
- Natural and synthetic polymers
- Nanofibers synthesis from natural polymers
- Polymeric synthesis and processing with special focus on crosslinking, grafting, etc.
- Chitosan composites for different industrial, biomedical and desalinations/pervaporation/gas separation applications
- Electrospinning for nano/fibrous materials/membranes
- Graphene synthesis and composites, Controlled release of fertilizers, hydrogel beads synthesis
- Blends for packaging material using different extracts

PROFESSIONAL MEMBERSHIPS

- Pakistan Engineering Council (PEC) CHEM / 5836
- Pakistan Engineering Congress (PECC) /4817
- Pakistan Institute of Chemical Engineers (PICHE) A10061
- Institute of Engineers Pakistan (IEP)
- Chemical Society of Pakistan (P0433)

Computer Skills

- Mechanical Design PV-ELITE, Auto Cad
- Software MATLAB
- Engineering Calculator Thermo solver, Steam Table Calculator etc.
- Languages FORTRAN
- Operating Systems Win 9X, Win 2000
- Tools MS Office, Visio