

NOOR SAEED KHAN KHATTAK

PhD Physical Chemistry

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CURRENT POSITION:

Assistant Professor BPS-19. National Centre of Excellence in Physical Chemistry, University of Peshawar, Peshawar KPK, Pakistan

EDUCATION

Postdoc, (Polymer composites and Photo catalysis) 2024:

National Centre of Excellence in Physical Chemistry, University of Peshawar, Peshawar KPK, Pakistan

Ph.D. (Polymer/Material Chemistry CGPA 3.6) 2017:

National Centre of Excellence in physical Chemistry, University of Peshawar, KPK, 25120, Pakistan

M.Phil. (Physical Chemistry CGPA 3.5) 2012:

Department of Chemistry, Gomal University, D.I.Khan, KPK, 29220, Pakistan

M.Sc. (Physical Chemistry 65% Marks) 2008:

Department of Chemistry, Gomal University, D.I.Khan, KPK, 29220, Pakistan

B.Sc. (Biological Sciences 61% Marks) Major Chemistry 2006:

Govt. Post Graduate College Kohat, University of Science & Technology Kohat, KPK, Pakistan

PROFESSIONAL EXPERIENCE

01-01-2024/ Till date	National Centre of Excellence in Physical Chemistry UOP Peshawar	Assistant Professor
2/2018-2/2022	Islamia College Peshawar	Assistant Professor of Chemistry and Materials Science
8/2016-1/2017	University of South Carolina USA	Visiting Scholar
5/2012-12/2017	Capital Degree College Peshawar	Lecturer in Chemistry
3/2010-2/2011	GDC No. 3, D.I.Khan	Lecturer in Chemistry
1/2008-8/2009	Paradise Public College	Lecturer in Chemistry

AREA OF INTEREST

Multidisciplinary research fields in which some selective topics are given below:

Surface Functionalization:

Functionalization of polymers and polymeric materials for enhancing stability and its wider application.

Composites Materials:

Synthesis and fabrication of composites materials, surface modifications of different surfaces with composites. Application of composites in energy storage, electrode and supercapacitor. Modifications of several composites materials for electrochemical sensors.

Biosensors:

Application of composites materials as biosensor.

Polymers:

Polymer synthesis and fibre reinforced polymer matrix composites materials and its applications in tissue engineering.

Antimicrobial materials synthesis (extract and green synthesis):

Materials extraction of different compounds from medical plants and its applications as antibacterial, antifungal and antivirals.

Graphene oxide nanomaterials functionalization:

Graphene oxide synthesis and its application in energy storage materials.

Ceramics:

Preparation and different ceramics materials for dielectric application.

Compounds Purification:

Extraction, separation, and purification of low and high molecular weight compounds via gel chromatography, affinity and other separation techniques.

INSTRUMENTS EXPERTISE

Rheometer

SEM/EDX

FTIR

TG/DTA

TPD

XRD

XPS

GCMS

LCMS

UV and Visible spectroscopy

Cyclic Voltammetry

AC Impedance analyser

Universal Testing Machine

Conductivity meter

Micro, Ultra and Nano filtration

Column, membrane chromatography system

HONORS & AWARDS

1. First position in HSSC exam at GDC Sabir Abad Karak KPK Pakistan
2. Four year merit scholarship for Ph.D studies in National Centre of Excellence in Physical Chemistry University of Peshawar (Rs. 0.576M)
3. Six month Higher Education Commission Scholarship from Higher Education under the International Research Support Initiative Program for USA (Rs. 1.484M)

Membership in Committees

Member Selection Committee NCE in Physical Chemistry, UOP	2024
Member Centre Promotion Committee NCE in Physical Chemistry, UOP	2024
Member Finance Committee for Projects Centre for Materials Science	2020
Member of Board of Studies for Centre for Materials Science ICP Peshawar Pakistan	2018-2019-2020
Member Technical Committee for Procurement of High Tech Instruments Centre for Materials Science	2018-2019-2020
Member Technical Committee for Organizing International Conference National Centre of Excellence in Physical Chemistry UOP Peshawar	2012-2013
Member Gomalian Student Council GU D.I.Khan	2007-2008

PROJECTS

1. Support to Islamia College for Research Centre ADP No 824/170561 (2021-2022) as executer, PKR. **379.788** Million.
2. Beneficiary of SRGP (21-2043/SRGP/R&D/HEC/2018) HEC grant as PI, **PKR. 0.50** Million under the title "*Fabrication and Characterization of Polymer-Silver nanoparticles nanocomposites with Graphene Oxide for bio-Sensing Application*".
Completed

FELLOWSHIP

Six-month research fellowship in Department of Chemical and Bio-medical Engineering University of South Carolina USA.

COMPUTER & SOFTWARE SKILSS

Basic computer operation, Office automation software: MS Office (97/2000/2007/2010/2013/2016), Operating system: Windows 98/2000/XP/7/8/10, Disk operating system and Installation, Reference citation software: Endnote (All Version) Mendeley. Microstructure software: Nanomeasure, Image J and CMPR. Graphing and Structure: Origin (All Version) and ChemDra (All Version)

M.Phil. SUPERVISED/CO-SUPERVISED

1. **Mr. Naveed Alam;** FABRICATION AND CHARACTERIZATION OF LIGHT WEIGHT COMPOSITES BLOCK FOR CONSTRUCTION PURPOSES USING THREE ADDITIVES: 2021 (Degree awarded)

2. **Mr. MOHIB ULLAH;** SYNTHESIS, CHARACTERIZATION AND COMPARATIVE STUDIES OF POLYETHYLENE OXIDE/CARBON NANOTUBES POLYMETHYLMETHACRYLATE CARBON NANOTUBE COMPOSITES: 2021 (Degree Awarded)

BS THESIS SUPERVISED/CO-SUPERVISED

1. **Farhan Ahmad & Hashir Mumtaz** BS Physics Session 2018. Thesis Title “EFFECT OF LIME ON THE PHYSICAL PROPERTIES OF COMPRESSED EARTH BRICKS”
2. **Naveed Alam & Imtiaz Ahmad Khan** BS Physics Session 2018. Thesis Title “DEVELOPMENT OF UNFIRED COMPRESSED EARTH BRICKS”
3. **Ubaid Ullah** BS Physics Session 2018. Thesis Title “REVIEW ON COMPOSITE MATERIALS”
4. **Muhammad Imran & Muhammad Shoaib** BS Physics Session 2018. Thesis Title “REVIEW ON LIGHTWEIGHT AERATED BLOCKS”
5. **Iltaf Hussain & Muhammd Irfan Ullah Khan** BS Physics Session 2018. Thesis Title “PREPARATION AND CHARACTERIZATION OF COMPRESSED EARTH BRICKS”

CONFERENCE ORGANIZED

Three Days 1st National Conference on Recent Trends in Physics and Materials Science 25-27 March 2019. University of Science and Technology Bannu KPK Pakistan.

BOOK CHAPTERS

1. Rehman TU, Shah LA, **Khattak NS**, Khan A, Rehman N, Alam S. Superabsorbent Hydrogels for Heavy Metal Removal. In Heavy Metal Ions Removal 2019 Nov 19. IntechOpen.

Patents:

1. Murtaza Sayed, Faryal Gohar, Ikhtiar Gul, Faiza Rehman, **Noor Saeed Khattak** and Maleeha Bushra; Surface modified zerovalent copper as novel peroxymonosulfate (PMS) activator for the treatment of industrial waste water: **Patent application No. 697/2021.**

2. Sahar, J., Farooq, M., Naeem, A., Ramli, A., **Khattak N. S.** Sustainable Biodiesel Production from low cost feedstock using greener Bifunctional Heterogeneous Catalyst. **Patent application No. 536/2022**
3. Sahar, J., Farooq, M., Naeem, A., Ramli, A., **Khattak N. S.** Environmentally benign approach to biodiesel production using indigenous raw materials. **Patent application No. 537/2022**

PUBLICATIONS

1. **Khattak NS**, Ara L, Shah LA, Ullah R, Rehman TU. Fabrication of non-enzymatic and highly sensitive electrochemical ascorbic acid sensor based on GO/Ag/PMMA nanocomposites. *Inorganic Chemistry Communications*. 2024 Oct 24:113386.
2. Noman M, Farooq M, Ramli A, Abid G, Perveen F, Muhammad D, Ihsan R, Jamil F, Ayub AR, **Khattak, N,S.**, Rahman AU. Bio-templating approach and DFT study of ZrMo@ KIT-6 catalyst for the conversion of deep fried oil into sustainable biodiesel production. *Fuel*. 2025 Feb 1;381:133418..
3. Arbab Safeer, Naveed Alam, **Noor Saeed Khattak**, Atta Ullah and Aqib Ali Khan, Phase Analysis and Microstructural Characterization of High Flexural Strength Eco-Friendly Geo Polymer Construction Block Made from Local Waste Material, Accepted in Iranian Journal of Chemistry and Chemical Engineering (accepted)
4. ur Rahman K, Zaman U, Alem A, Khan D, **Khattak NS**, Alissa M, Aloraini GS, Abdelrahman EA, Alsuwat MA, Alzahrani KJ, Almehmadi M. Alkaline protease functionalized hydrothermal synthesis of novel gold nanoparticles (ALPs-AuNPs): A new entry in photocatalytic and biological applications. *International Journal of Biological Macromolecules*. 2024 Mar 21:131067.
5. **Khattak NS**, Khan MS, Shah LA, Farooq M, Khan A, Ahmad S, Jan SU, Rehman N. The Effect of Low Weight Percent Multiwalled Carbon Nanotubes on the Dielectric Properties of Non-Conducting Polymer/Ceramic Nanocomposites for Energy Storage Materials. *Zeitschrift für Physikalische Chemie*. 2020 Jan 28; 234(1):11-26.
6. **Khattak NS**, Ahmad AS, Shah LA, Ara L, Farooq M, Sohail M, Kadir SI. Thermal and Rheological Study of Nanocomposites, Reinforced with Bi-Phase Ceramic Nanoparticles. *Zeitschrift für Physikalische Chemie*. 2019 Aug 27; 233(9):1233-46.
7. Khan MS, **Khattak NS**, Sohail M. Synthesis and characterization of composites of ceramic nano-particles with non-conducting polymers for dielectric materials production. *Journal of Materials Science: Materials in Electronics*. 2017 Jan 1; 28(2):1997-2003.

8. Khan MS, Sohail M, **Khattak NS**. Conversion of mixed low-density polyethylene wastes into liquid fuel by novel CaO/SiO₂ catalyst. *Journal of Polymers and the Environment*. 2016 Sep 1; 24(3):255-63.
9. Khan, M. S., Sohail, M., **Khattak, N. S.**, & Sayed, M. (2016). Industrial ceramic waste in Pakistan, valuable material for possible applications. *Journal of cleaner production*, 139, 1520-1528. 2016 Dec 15.
10. Alam S, Subhan H, Shah LA, Khattak NS. Swelling and kinetic investigations of basic blue-3 sorption by polyacrylamide/Gum Arabic hybrid hydrogel in aqueous medium. *Zeitschrift für Physikalische Chemie*. 2022 Feb 1;236(2):197-213.
11. Sohail, M., Saleem, M., Ullah, S., **Saeed, N.**, Afridi, A., Khan, M., & Arif, M. (2017). Modified and improved Hummer's synthesis of graphene oxide for capacitors applications. *Modern Electronic Materials*, 3(3), 110-116. 2017 Sep 1.
12. Shah, L. A., Javed, R., Khan, A., Bibi, I., **Khattak, N. S.**, & Alam, S. (2019). One-pot synthesis and Rheological study of cationic poly (3-acrylamidopropyltrimethyl ammoniumchloride) P (APTMACl) polymer hydrogels. *Zeitschrift für Physikalische Chemie*, 233(8), 1145-1159. 2019 Aug 27.
13. Khan, M. S., Sohail, M., **Saeed, N.**, & Afridi, A. (2016). Synthesis and characterization of three-phase polymer-graphene oxide-ceramic composites. *J. Chem. Soc. Pak*, 38(02), 234. 2016 Apr 1.
14. Sohail M, Khan MS, Omer M, Marwat IU, Khattak NS, Khan SU, Ullah Z, Rahman SU. Synthesis, morphology, structural, and rheological studies of Fe 0.01 Al 0.5 La. 0.01 Zn 0.98 O-based polyaniline composite materials. *Journal of the Australian Ceramic Society*. 2019 Mar; 55(1):25-36.
15. Sohail, M., Khan, M. S., **Saeed, N.**, Arif, M., Irfan, M., & Omer, M. (2017). Synthesis, structural, thermal and dielectric properties of graphene oxide based barium titanate composite films: Possible materials for embedded capacitors. *Materials Discovery*, 10, 29-36. 2017 Dec 1.
16. Zheng J, Aziz T, Fan H, Haq F, Khan FU, Ullah R, Ullah B, Khattak NS, Wei J. Synergistic impact of cellulose nanocrystals with multiple resins on thermal and mechanical behavior. *Zeitschrift für Physikalische Chemie*. 2021 Oct 1; 235(10):1247-62.
17. Sohail, M., Khan, M. S., & **Khattak, N. S.** (2016, August). Thermal, mechanical and electrical properties of polyaniline based ceramic nano-composites. In *IOP Conference Series: Materials Science and Engineering* (Vol. 146, No. 1, p. 012011). IOP Publishing.

18. **Khattak NS**, Shah LA, Sohail M, Ahmad S, Farooq M, Ara L, Kader SI. The Role of Non-Ionic Surfactants in Solubilization and Delivery of Sparingly Soluble Drug Naproxen Sodium (NS): A Case Study. *Zeitschrift für Physikalische Chemie*. 2019 Jul 26; 233(7):933-47.
19. Durrani, G. F., Baloch, M. K., **Khattak, N. S.**, Niazi, A., Ullah, M. I., & Rauf, A. (2013). Effect of Temperature and Naproxen Sodium over the Micellization Behaviour of N-Cetyl N, N, N-trimethyl ammonium bromide. *Asian Journal of Chemistry*, 25(7), 3539-3541. 01 July 2013.
20. Farooq, M., Ramlia, A., Tariq, M., Ullah, Z., **Khattak, N.S.**, Ullah, I., Humayun, M. (2018). Future Prospective of Renewable Diesel Production from Triglycerides: A Short Review. *Physical Chemistry* 18(1) (2018) 14-18
21. Khan M, Shah LA, Khan MA, **Khattak NS**, Zhao H. Synthesis of an un-modified gum arabic and acrylic acid based physically cross-linked hydrogels with high mechanical, self-sustainable and self-healable performance. *Materials Science and Engineering: C*. 2020 Nov 1; 116:111278.
22. Aziz T, Rahim F, Ullah R, Ullah A, Haq F, Khan FU, Kiran M, Khattak NS, Iqbal M. Synthesis and Biological Evaluation of Isatin Based Thiazole Derivatives. *Biomedical Journal of Scientific & Technical Research*. 2020; 28(5):21919-25.
23. Irfan M, Khan M, ur Rehman T, Ali I, Shah LA, Khattak NS, Khan MS. Synthesis and rheological survey of xanthan gum based terpolymeric hydrogels. *Zeitschrift für Physikalische Chemie*. 2021 May 1; 235(5):609-28.
24. Rehman TU, Shah LA, Khan M, Irfan M, **Khattak NS**. Zwitterionic superabsorbent polymer hydrogels for efficient and selective removal of organic dyes. *RSC advances*. 12 June 2019; 9(32):18565-77.
25. Zaman U, Naz R, Khattak NS, ur Rehman K, Saeed A, Farooq M, Sahar J, Iqbal A. Kinetic and thermodynamic studies of novel acid phosphates extracted from *Cichorium intybus* seedlings. *International Journal of Biological Macromolecules*. 2021 Jan 31; 168:195-204.
26. Zaman U, Naz R, Khattak NS, Ur Rehman K, Iqbal A, Ahmad S, Shah LA. Investigating the thermodynamic and kinetics properties of acid phosphatase extracted and purified from seedlings of *Chenopodium murale*. *International Journal of Biological Macromolecules*. 2020 Dec 15; 165:1475-81.
27. Zaman U, Naz R, Rehman KU, **Saeed Khattak N***, Ahmad S, Iqbal A, Jan SU. Investigating the Impact of Various Parameters on the Activity of Acid Phosphatases

- from Seedlings of *Coronopus didymus*. *Journal of proteome research*. 2020 Jun 18; 19(8):3201-10.
28. Farooq M, Ramli A, Naeem A, Noman M, Shah LA, **Khattak NS**, Perveen F. A green route for biodiesel production from waste cooking oil over base heterogeneous catalyst. *International Journal of Energy Research*. 2019 July 17; 43(10):5438-46.
29. Zain, U., Baloch, M. K., & **Khattak, N. S.** (2016). Removal of histidine residue from ZN-a-2-glycoprotein by carboxypeptidase enzyme using spectrofluorimetry and Maldi-tof-Mass spectroscopy. *Indian Journal of Animal Research*, 50(5), 684-689.
30. Ali Khan A, Arbab SA, Manan A, Saboor A, Ullah A, **Khattak NS**, Ahmad I, Naeem Khan M, Bashir T, Asif M, Sadiq M. Enhanced energy storage properties of La³⁺ modified 0.92 Bi_{0.5} Na_{0.5} TiO₃-0.06 Ba (Zr 0.2 Ti 0.8) O₃-0.02 NaNbO₃ ternary ceramic system. *Materials Research Express*. 2021 Apr; 8(4):045506.
31. ur Rehman K, Zaman U, Tahir K, Khan D, **Khattak NS**, Khan SU, Khan WU, Nazir S, Bibi R, Gul R. A *Coronopus didymus* based eco-benign synthesis of Titanium dioxide nanoparticles (TiO₂ NPs) with enhanced photocatalytic and biomedical applications. *Inorganic Chemistry Communications*. 2022 Mar 1;137:109179.
32. Subhan H, Alam S, Shah LA, **Khattak NS**, Zekker I. Sodium alginate grafted hydrogel for adsorption of methylene green and use of the waste as an adsorbent for the separation of emulsified oil. *Journal of Water Process Engineering*. 2022 Apr 1; 46:102546.
33. Rehman, K.u., M. Gouda, U. Zaman, K. Tahir, S.U. Khan, S. Saeed, E. Khojah, A. El-Beltagy, A.A. Zaky, M. Naeem, M.I. Khan, and **N.S. Khattak**, Optimization of Platinum Nanoparticles (PtNPs) Synthesis by Acid Phosphatase Mediated Eco-Benign Combined with Photocatalytic and Bioactivity Assessments. *Nanomaterials*, 2022. 12(7): p. 1079.
34. Sahar J, Farooq M, Ramli A, Naeem A, **Khattak NS**. Biodiesel production from Mazari palm (*Nannorrhops ritchiana*) seeds oil using Tungstophosphoric acid decorated SnO₂@ Mn-ZIF bifunctional heterogeneous catalyst. *Applied Catalysis A: General*. 2022 Aug 5; 643:118740.
35. Sahar J, Farooq M, Ramli A, Naeem A, **Khattak NS**, Ghazi ZA. Highly efficient heteropoly acid decorated SnO₂@ Co-ZIF nanocatalyst for sustainable biodiesel production from *Nannorrhops ritchiana* seeds oil. *Renewable Energy*. 2022 Oct 1; 198:306-18.
36. Khan Khattak NS, Yousafzai NA, Arbab SA, Ullah A. Effect of Portland cement on the Development of Unfired Compressed Earth Bricks; Special Application as Construction

Material in Poor Territory of Pakistan. *Iranian Journal of Chemistry and Chemical Engineering (IJCCE)*. 2022 Jun 20.

37. ur Rehman K, Zaman U, Khan SU, Tahir K, Hajira B, Al-Humaidi JY, Refat MS, **Khattak NS**, Khan D. Hydrothermal assisted eco-benign synthesis of novel β -galactosidase mediated Titanium dioxide nanoparticles (β -gal-TiO₂ NPs): Ultra efficient nanocatalyst for methylene blue degradation, inactivation of bacteria, and stabilization of DPPH radicals. *Materials Chemistry and Physics*. 2022 Oct 11:126877.
38. Ara L, Shah LA, Ye D, Khattak NS. Silver nanoparticles doped polymethylmethacrylate [Ag/PMMA] nanocomposite as smart material for non-enzymatic glucose sensor. *Journal of Dispersion Science and Technology*. 2023 Apr 1:1-9.

CONFERENCES/WORKSHOPS /SEMINARS ATTENDED

1. 7th International and 17th National chemistry Conference held at the Department of Chemistry, Gomal University, Dera Ismail Khan, Pakistan (Feb.26-28-2007).
2. 8th International and 20th National Chemistry Conference held at the Department of Chemistry, Quaid-e-Azam University Islamabad, Pakistan (Feb.15-17-2010).
3. One Day Workshop on “Problem Related to Sugar Industry”. Gomal University Dera Ismail Khan (08-03-2011).
4. 11th International and 23rd National Chemistry Conference held National Centre of Excellence in Physical Chemistry, University of Peshawar, KPK, Pakistan (15 to 17th October 2012).
5. International Conference on Physical and Environmental Chemistry (ICPC-2013), University of Peshawar, Bara Gali Pakistan (September 9-11-2013).
6. 25th National and 13th International Chemistry Conference 2014 held in University of the Punjab Lahore, Pakistan (October 20-22-2014).
7. 26th National and 14th International Chemistry Conference 2015 held in The Islamia University of Bahawalpur, Pakistan (October 5-8-2015).
8. 14th International Symposium on Advance Materials 2015 held in National Centre for Physics Islamabad, Pakistan (October 12-16-2015).
9. 5th Invention to Innovation Summit 3-4, Nov, 2015, University of Haripur.
10. One day workshop on reference management software Mandalay. Organized by National Centre of Excellence in Physical Chemistry, University of Peshawar. (14-12-2015)

11. Two days works on Research Paper and Patent writing. Organized by National Centre of Excellence in Physical Chemistry, University of Peshawar. (30, 31-2016).
12. Two days' Workshop on Advanced Materials Characterization Techniques August 16-17 2018, organized by National Centre of Excellence in Physical Chemistry, University of Peshawar Pakistan.
13. Three Days 1st National Conference on Recent Trends in Physics and Materials Science 25-27 March 2019. Organized by Department of University of Science and Technology Bannu. Participated as Speaker.
14. "Two day Scientific Poster Exhibition 18th and 19th April 2019" Organized by National Center of Excellence in Physical Chemistry University of Peshawar 25120 Pakistan.
15. "International Chemistry Workshop for Young Scientists (ICWYS 2020) January 23-24, 2020" Organized by National Center of Excellence in Physical Chemistry University of Peshawar 25120 Pakistan.

REFERENCES

1. Prof. Dr. Tahira Mahmood

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2. Prof. Dr. Abdul Naeem Khan

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3. Dr. Ismaiel Jabbari

Full Professor of Chemical and Biomedical Engineering Swearingen Engineering Centre, Rm 2C11 University of South Carolina, 301 Main Street, Columbia, SC 29208. E-mail

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4. Mr. Akmal Khan

Director General, Sustainable and Development Unit, Planning and Development Department Khyber Pakhtunkhwa Peshawar. Phone: 0092 333 5019188