

Mobile # +97466125107

Email : [shakoora@qu.edu.qa](mailto:shakoora@qu.edu.qa), [shakoora7@gmail.com](mailto:shakoora7@gmail.com)

Date of Birth: 23 April 1967. Nationality: Pakistani

## Dr. Abdul Shakoor

**Research Associate**  
**Center for Advanced Materials (CAM)**  
**Office of VP for Research and Graduate Studies**  
**Qatar University, P.O. Box 2713, Doha, Qatar**



### RESEARCH INTERESTS:

1. Development and characterization of cathode materials for Lithium/Sodium ion batteries.
2. Synthesis and characterization of novel nanocomposite coatings for high wear and corrosion protection
3. Development of aluminum metal matrix nanocomposites (AMMCs)
4. Synthesis and characterization of shape memory alloy (SMAs).

### WORK EXPERIENCE:

**01/10/2014 till now: Research Fellow/Research Associate-Center for Advanced Materials (CAM), Qatar University, Doha, Qatar.**

**05/07/2012 -30/09/2014 Post Doc. Researcher –Nanocomposite coating and electrochemistry lab. Dept. Chemical Eng. Qatar University, Doha, Qatar. Research conducted on:**

- ✚ Synthesis and characterization of cathode materials for Lithium/Sodium ion batteries.
- ✚ Synthesis and characterization of nanocomposite coatings for high wear and severe corrosion applications.

**01/06/2011 to 30/06/2012 Research Assistant Professor -NEST Lab., Dept. of Materials Science/ KAIST-Republic of Korea**

- ✚ Conducted research on synthesis and characterization of advanced cathode materials for sodium/lithium ion batteries.

**01/02/2011 to 30/05/2011. Post Doc. Researcher-NEST Lab., Dept. of Materials Science-KAIST-Republic of Korea**

- ✚ Conducted research on synthesis and characterization of advanced cathode materials for sodium/lithium ion batteries for energy storage applications.

**27/05/2009-30/01/2011 Post Doc. Researcher-AEM. Lab. Dept. of Materials Science-KAIST-Republic of Korea**

- ✚ Conducted research on synthesis and characterization of cathodes for lithium/sodium batteries.

**03/07/2007 to 15/06/2009 Assistant Professor -Faculty of Materials Science and Eng., GIKI, Pakistan**

Taught the following undergraduate courses:

- ✚ MM112 Introduction to Engineering Materials
- ✚ MM 211 Materials Thermodynamics
- ✚ MM 231 Phase Equilibria and Microstructures
- ✚ MM 332 Heat Treatment and Processing
- ✚ MM 362 Ceramics and Glasses
- ✚ MM 313 Foundry Engineering
- ✚ MM 452 Surface Engineering

**18/09/2003 to 27/05/2007 Graduate Assistant (GA)-Faculty of Materials Science and Eng., GIKI, Pakistan**

- ✚ Assisting Faculty Members in their teaching and research activities
- ✚ Teaching undergraduate courses
- ✚ Supervised Lab. Experiments for undergraduate students
- ✚ MM 344 Materials Lab IV (Heat Treatment, Foundry Engineering, Polymer Engineering)
- ✚ MM 345 Materials Lab V (Welding and Joining, Non Ferrous Extraction Metallurgy)

**18/08/1994 to 17/09/2007 Assistant Works Manager-Heavy Industries (HIT) Taxila, Pakistan**

- ✚ Officer incharge Quality Control Department (Sep 2002 to May 2007)
- ✚ Officer incharge Surface Treatment Shop (1999 to 2000)
- ✚ Officer incharge Foundry and Forge Shop (1997 to 1999)
- ✚ Officer incharge Heat Treatment Shop (1994 to 1997)

**18/02/1992 to 15/08/1994 Assistant Manager Technology (FFW)-Heavy Mechanical Complex, Taxila, Pakistan**

- ✚ Officer incharge Foundry Technology
- ✚ Officer incharge Heat Treatment Technology

**EDUCATION:**

**18/09/2003 to 27/05/2007 PhD in Materials Engineering-GIK Institute of Eng. Sciences and Tech. (GIKI), Pakistan.**

Advisor: Prof.Fazal A Khalid

PhD thesis title: Effect of Samarium additions on shape memory and thermomechanical behavior of Iron based shape memory alloys.

**01/01/2001 to 31/12/2002 M. Sc in Metallurgy and Materials Eng., Uni. of Eng. and Tech. (UET)-Lahore, Pakistan**

Advisor: Prof.Dr. Javed Iqbal

M.Sc thesis title: Factors affecting the adhesion of zinc coating on the cyanided parts.

**01/02/1987 to 18/08/ 1992 B.Sc. in Metallurgy and Materials Eng., Uni. of Eng. and Tech. (UET)-Lahore, Pakistan**

Advisor: Prof.Dr. Javed Iqbal

Final Year Project Report Title: Effect of austenitizing temperature on grain growth of plain carbon steels.

**AWARDS AND DISTINCTIONS:**

- ✚ Recognized as a distinguished and most influential Scientist (2%) worldwide for the year 2019 according to study conducted by Stanford University (<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000918>).
- ✚ Co-supervised, Mr. Adnan Khan (QUID: 201704740), Graduate student of Mechanical and Industrial Engineering, College of Engineering, Qatar University, who awarded with the best thesis award, 28 Oct. (2020).
- ✚ Awarded with IAAM Scientist Award by the International Association of Advanced Materials (IAAM), Sweden, Stockholm, during online video proceedings, AMLS dated 6<sup>th</sup> July 2020.
- ✚ Awarded Graduate Faculty Status in the Department of Mechanical and Industrial Engineering, Qatar University, Doha, Qatar w.e.f 16 December 2019 till June 2022.
- ✚ Awarded with the best poster presentation award at Advanced Functional Materials Congress 2019 (AFMC-2019) held in Stockholm, Sweden, 24-27 March 2019.
- ✚ Awarded with certificate of outstanding contribution in Reviewing, 2017 by Materials Chemistry and Physics.
- ✚ Awarded with IAAM Young Scientist Medal Award during AWMC, 4-8 Feb. 2018, Singapore.

- ✦ Awarded Gold Medals and Honors Degree in Bachelor of Engineering by UET, Lahore, Pakistan for achieving highest position in the department.
- ✦ Awarded merit scholarship for standing first in department in 3<sup>rd</sup> and final year in B.Sc. Eng.
- ✦ Awarded Merit Scholarship in F.Sc (12 years education) by Gujranwala Board for meritorious achievements.
- ✦ Awarded merit scholarship in SSC (10 years education) by Gujranwala Board for meritorious achievements.
- ✦ Awarded Commendation Certificate by the project Director, HIT for improving production and process of Heat Treatment Shop.
- ✦ Best poster award in technical poster competition held at GIKI in 2008.
- ✦ Awarded Brain Korea 21 (BK 21) research fund award for three years to develop new cathode materials for lithium and sodium ion batteries.

## **RESEARCH ACTIVITIES:**

### **27/07/2009-till now Synthesis and characterization of cathode materials for Lithium/sodium ion batteries.**

- ✦ Solid state synthesis and electrochemical behavior of NaFePO<sub>4</sub>/NaMnPO<sub>4</sub>/NaCoPO<sub>4</sub>.
- ✦ Effect of particle size and carbon coating on the electrochemical behavior Na<sub>2</sub>CoPO<sub>4</sub>F.
- ✦ Synthesis, structural evaluation and electrochemical behavior of Na<sub>1.5</sub>VOPO<sub>4</sub>F<sub>0.5</sub>.
- ✦ A combined first principle and experimental study on the synthesis, structural evaluation and electrochemical response of Na<sub>3</sub>V<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>F<sub>3</sub>.
- ✦ Mechanochemical synthesis and electrochemical characterization of Na<sub>3</sub>FeF<sub>6</sub> in sodium ion battery and lithium ion battery.
- ✦ Electrochemical synthesis of sodium intercalated multicomponent olivine (NaFe<sub>1/3</sub>Mn<sub>1/3</sub>Co<sub>1/3</sub>PO<sub>4</sub>) cathodes and their electrochemical response in Sodium Ion battery.
- ✦ Hydrothermal synthesis of Na<sub>3</sub>Fe<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>F<sub>3</sub> and its characterization.
- ✦ Hydrothermal synthesis of Na<sub>3</sub>Mn<sub>2</sub>(PO<sub>4</sub>)<sub>2</sub>F<sub>3</sub> and its characterization.
- ✦ Synthesis of novel cathode LiNa<sub>0.5</sub>VOPO<sub>4</sub>F<sub>0.5</sub> for high performance lithium rechargeable batteries.
- ✦ Synthesis of multicomponent pyrophosphates (Li<sub>2</sub>Fe<sub>1/3</sub>Mn<sub>1/3</sub>Co<sub>1/3</sub>P<sub>2</sub>O<sub>7</sub>) and study of its structural changes during lithiation/delithiation process through Insitu analysis.
- ✦ Pyrophosphates as highly safe cathode materials for lithium ion batteries; An Insitu analysis combined with first principle studies.
- ✦ Synthesis of nano particles of LiMnPO<sub>4</sub> and study of their electrochemical activity in lithium rechargeable battery.
- ✦ Solid state synthesis of LiMnPO<sub>4</sub> and effect of doping of iron and niobium on its electrochemical performance.
- ✦ Solid state synthesis of LiMnPO<sub>4</sub> and effect of doping of vanadium and niobium on its electrochemical performance.
- ✦ Solid state synthesis of LiMnPO<sub>4</sub> and effect of doping of iron and cobalt on its electrochemical performance.
- ✦ Solid state synthesis of LiMnPO<sub>4</sub> and effect of doping of niobium on its electrochemical performance.
- ✦ Synthesis and electrochemical behavior of Na<sub>2</sub>FeP<sub>2</sub>O<sub>7</sub> in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of Na<sub>2</sub>MnP<sub>2</sub>O<sub>7</sub> in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of Na<sub>2</sub>CoP<sub>2</sub>O<sub>7</sub> in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of Na<sub>2</sub>Fe<sub>1/2</sub>Mn<sup>1/2</sup>P<sub>2</sub>O<sub>7</sub> in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of Na<sub>2</sub>Fe<sub>1/3</sub>Mn<sup>1/3</sup>Co<sub>1/3</sub>P<sub>2</sub>O<sub>7</sub> in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of Li<sub>2</sub>Fe<sub>1/3</sub>Mn<sup>1/3</sup>Co<sub>1/3</sub>P<sub>2</sub>O<sub>7</sub> in Lithium rechargeable batteries.
- ✦ Ion exchange synthesis of LiNaFe<sub>0.5</sub>Mn<sub>0.5</sub>P<sub>2</sub>O<sub>7</sub> high performance cathodes for lithium ion batteries.
- ✦ Off stoichiometric synthesis of Na<sub>2</sub>VP<sub>2</sub>O<sub>7</sub> and its effect on its electrochemical properties.
- ✦ Chemical synthesis of Li<sub>2</sub>MnP<sub>2</sub>O<sub>7</sub>: A feasibility study.

**05/07/2012 till now Synthesis and characterization of nanocomposite coatings for wear and corrosive environment.**

- ✚ Ni-P-TiO<sub>2</sub>.....Sol. enhanced electrodeposited/electroless coatings.
- ✚ Ni-P-ZrO<sub>2</sub>.....Sol. enhanced electrodeposited/electroless coatings.
- ✚ Ni-P-Cr<sub>2</sub>O<sub>3</sub>.....Sol. enhanced electrodeposited/electroless coatings.
- ✚ Ni-P-AlN.....Electroless Ni based AlN nanocomposite coatings.
- ✚ Ni-B-TiO<sub>2</sub>.....Sol. enhanced electrodeposited/electrodeposited coatings
- ✚ Ni-B-ZrO<sub>2</sub>.....Sol. enhanced electrodeposited/electrodeposited coatings
- ✚ Ni-B-Al<sub>2</sub>O<sub>3</sub>.....Sol. enhanced electrodeposited/electrodeposited coatings
- ✚ Ni-B-CeO<sub>2</sub>.....Sol. enhanced electrodeposited/electrodeposited coatings

**May 2015-till now Development and characterization of Dye Sensitized Solar Cells and Thermoelectric Generators**

- ✚ Development of Organic dye sensitized solar cells
- ✚ Development of thermoelectric generators
- ✚ Development of organic/in-organic sensors for various applications

**03/07/2007 to 15/06/2009 Supervision of research projects on synthesis of advanced materials-shape memory alloys**

- ✚ Supervised the Final year Project on the effect of “Ag”content on mechanical and shape memory behavior of Ti-Nb shape memory alloys. (2009).
- ✚ Supervised the Final year Project on effect of samarium additions on magnetic properties of Fe-Mn-Si-Cr-Ni shape memory alloys. (2009).
- ✚ Co-supervisor in Ms research work on the effect of Vanadium and Molybdenum additions on shape memory behavior of iron based shape memory alloys. (2008).
- ✚ Co-supervisor in the B.Sc Final Year Project on corrosion behavior of iron based alloys containing samarium additions in 3.5% NaCl. (2008).
- ✚ Co-supervisor in the B.Sc Final Year Project on Development and characterization of Nickel based high temperature shape memory alloys containing samarium. (2008).
- ✚ Assisted in the Ms research work on in vitro study of corrosion behavior of NiTi alloy containing silver in artificial saliva. (2008).
- ✚ Co-supervisor in Ms research work on the effect of cobalt additions on mechanical and shape memory behavior of Ni-Al-Fe high temperature shape memory alloys. (2008).
- ✚ Co-supervisor in the B.Sc Final Year Project on effect of copper additions on shape memory behavior of iron based shape memory alloys. (2007).
- ✚ Assisted in the Ms. research work on the effect of silver additions on mechanical and shape memory behavior of NiTi shape memory alloys. (2007).

**PUBLICATIONS: (128)**

**1. International Journal Publications: (\* corresponding author)**

1. Sehrish Habib, Eman Fayyed, **Abdul Shakoor\***, Ramazan Kahraman, Aboubakr Abdullah, “ Improved self-healing performance of polymeric nanocomposites reinforced with talc nanoparticles (TNPs) and urea-formaldehyde microcapsules (UFMCs)”, **Accepted, Arabian Journal of Chemistry, 14 (2021) 102926, (I.F=4.76).**
2. Muddasir Nawaz, **R. A. Shakoor\***, Ramazan Kahraman, M. F. Montemor, “Cerium oxide loaded with gum Arabic as environmentally friendly anti-corrosion additive for protection of coated steel”, **Materials and Design, 198 (2021) 109361, (I.F=6.289).**
3. Adnan Khan, Motasem W. Abdelrazeq, Manohar Reddy Mattli, Moinuddin M. Yusuf, Abdullah Alashraf, Penchal Reddy Matli, **R. A. Shakoor\***, “Structural and mechanical properties of Al-SiC-ZrO<sub>2</sub> hybrid nanocomposites fabricated by microwave sintering technique”, **Crystals, 10 (2020) 904, (I.F=2.404)**

4. Jeffin James Abraham, Hanan Tariq, **R. A. Shakoor\***, Ramazan Kahraman, Siham Al-Qaradawi, "**synthesis and Performance Evaluation of  $\text{Na}_{(2-x)}\text{Li}_x\text{FeP}_2\text{O}_7$  ( $x=0, 0.6$ ) Hybrid Cathodes**", **ChemistrySelect**, **5** (2020), **12548-12557, (I.F=1.811)**
5. Khuram Shahzad, Eman M. Fayyad, Muddasir Nawaz, O. Fayyaz, **R. A. Shakoor\***, Mohammad K. Hassan, Malik Adeel Ume, M. N. Baig, A. Raza and Aboubakr M. Abdullah, "Corrosion and Heat Treatment Study of Electroless NiP-Ti Nanocomposite Coatings Deposited on HSLA Steel," **Nanomaterials**, **10** (2020), **1932, (I.F=4.324)**.
6. Jeffin James Abraham, Umair Nisar, Haya Monawwar, Aisha Abdul Quddus, **Rana Abdul Shakoor\***, Mohamed I. Saleh, Ramazan Kahraman, Siham Al-Qaradawi, Amina S. Aljaber, "Improved Electrochemical Performance of  $\text{SiO}_2$  Coated Li-rich Layered Oxides- $\text{Li}_{1.2}\text{Ni}_{0.13}\text{Mn}_{0.54}\text{Co}_{0.13}\text{O}_2$ ", **Journal of Materials Science: Materials in Electronics**, (2020), **1-12, DOI: 10.1007/s10854-020-04481-6, (I.F=2.220)**.
7. Mostafa H. Sliem, Khuram Shahzad, Sivaprasad V. N, **R. A. Shakoor\***, Aboubakr M. Abdullah, Osama Fayyaz, Ramazan Kahraman, Malik Adeel Umer, "Enhanced mechanical and corrosion protection properties of pulsed electrodeposited NiP-ZrO<sub>2</sub> nanocomposite coatings", **Surface and Coatings Technology**, **403** (2020) **126340, (I.F=3.784)**.
8. Manohar Reddy Mattli, Penchal Reddy Matli, Adnan Khan, Moinuddin Yusuf, A. Al- Ashraf, **R. A. Shakoor\***, Manoj Gupta: "Effect of Inconel625 particles on the microstructural, mechanical, and thermal properties of Al-Inconel625 composites", **Materials Today Communications** **25** (2020) **101546, (I.F=2.678)**.
9. Hanan Abdurehman Tariq, Jeffin James Abraham, **R. A. Shakoor\***, Siham Al-Qaradawi, Muhammad Ramzan Abdul Karim, Usman Chaudhry, Synthesis of lithium manganese oxide nanocomposites using microwave assisted chemical precipitation technique and their performance evaluation in lithium-ion batteries", **Energy Storage**, **2** (2020), **e202, (I.F=NYA)**.
10. Adnan Khan, Amani Hassanein, Sehrish Habib, Muddasir Nawaz, **R. A. Shakoor\***, Ramazan Kahraman, "Hybrid halloysite nanotubes as smart carriers for corrosion protection", **ACS Applied Materials & Interfaces**, **12**, **33, (2020) 37571-27584 (I.F=8.758)**.
11. Mahboobeh Attaei, Lénia Calado, Yegor Morozov, Maryna Taryba, **Abdul Shakoor**, Ramazan Kahraman, Ana Marques, Fatima Montemor, "Smart epoxy coating modified with isophorone diisocyanate microcapsules and cerium organophosphate for multilevel corrosion protection of carbon steel", **Progress in Organic Coatings**, **147** (2020), **105864 (I.F=4.469)**.
12. Gorakshnath Takalkar, Rahul Bhosale, Suliman Rashid, Fares AlMomani, Rana Abdul Shakoor, Abdullah Al Ashraf, "Application of Li, Mg, Ba, Sr, Ca, and Sn doped Ceria for Solar Driven Thermochemical Conversion of Carbon Dioxide", **Journal of Materials Science**, **55** (2020) **11797-11807, (I.F=3.442)**.
13. Gorakshnath Takalkar, Rahul Bhosale, Fares AlMomani, Suliman Rashid", **Abdul Shakoor**, "Ni incorporation in  $\text{MgFe}_2\text{O}_4$  for improved  $\text{CO}_2$ -splitting activity during solar fuel production", **Journal of Materials Science**, **25** (2020), **11086-11094, (I.F=3.442)**.
14. Sehrish Habib, Eman Fayyad, Muddasir Nawaz, Adnan Khan, **R. A. Shakoor\***, Ramazan Kahraman, Aboubakr Abdullah, "Cerium dioxide nanoparticles as smart carriers for self-healing coatings", **Nanomaterials** **10** (2020) **791, (I.F=4.034)**.
15. Adnan Khan, Penchal Reddy Matli, Muddasir Nawaz, Manohar Reddy Mattli, Gururaj Parande, Vyasraj Manakari, **Rana Abdul Shakoor\***, Amina S, "Microstructure and mechanical behavior of hot extruded Al-BiSn composites produced by powder metallurgy", **Applied Sciences**, **10** (2020) **2812, (I.F=2.217)**.
16. Nisar, Umair; J. A. Al-Hail, Sara Ahmad ; Petla, Ramesh ; Abdul Quddus , Aisha ; Monawwar, Haya ; **R. A. Shakoor\***; Essehli, Rachid; Amin, Ruhul, "Impact of surface coating on electrochemical and thermal behaviors of Li-rich  $\text{Li}_{1.2}\text{Ni}_{0.16}\text{Mn}_{0.56}\text{Co}_{0.08}\text{O}_2$  cathode", **RSC Advances**, **10** (2020) **15274 , (I.F=3.049)**.
17. Muddasir Nawaz, Sehrish Habib, Adnan Khan, **R. A. Shakoor\***, Ramazan Kahraman, "Cellulose microfibers (CMFs) as a smart carrier for autonomous self-healing in epoxy coating", **New Journal of Chemistry**, **09** March (2020), **DOI: 10.1039/c9nj06436b. (I.F=3.069)**.
18. Roma Raj, Yegor Morozov, Lénia Calado, Maryna Taryba, Ramazan Kahraman, **Abdul Shakoor**, Fatima Montemor, "Calcium carbonate particles loaded with triethanolamine and polyethylenimine for enhanced corrosion protection of epoxy coated steel" **Corrosion Science**, **167** (2020) **108548, (I.F=6.355)**.

19. Penchal Reddy Matli; Vyasraj Manakari; Gururaj Parande; Manohar Reddy Mattli; **Rana Abdul Shako**r; Manoj Gupta, “ Improving Mechanical, Thermal and Damping Properties of NiTi (Nitinol) Reinforced Aluminum Nanocomposites”, **J. Compos. Sci. 4 (2020), 19. (I.F=2.69).**
20. Khuram Shahzad, Mostafa H. Sliem, , **R. A. Shako**r\* , Ramazan Kahraman, Malik Adeel Umer, Umair Manzoor, Aboubakr M. Abdullah, Electrochemical and thermodynamic study on the corrosion performance of API X120 steel in 3.5% NaCl solution” **Scientific Reports, 10 (2020) 4314 (I.F=4.122).**
21. A. Bahgat Radwan and **R. A. Shako**r\*, “Aluminum Nitride (AlN) Reinforced Electrodeposited Ni-B Nanocomposite Coatings”, **Ceramics International 46 (2020) 9863-9871, (I.F=3.450)**
22. Gorakshanath Takalkar , Suliman Rashid , **R. A. Shako**r, Rahul Bhosale , Fares Abedalwally Ogleh AlMoma, Anand Kumar, Majeda Khraisheh, “Thermochemical Splitting of CO<sub>2</sub> Using Solution Combustion Synthesized LaMO<sub>3</sub> (where, M = Co, Fe, Mn, Ni, Al, Cr, Sr)”, **Applied Surface Science, 59 (2020) 144908. (I.F=5.155)**
23. Mahboobeh Attaei, Lénia Calado, Maryna Taryba, Yegor Morozov, **Abdul Shako**r, Ramazan Kahraman, Ana Marques, Fatima Montemor, “Autonomous self-healing in epoxy coatings provided by high efficiency isophorone diisocyanate (IPDI) microcapsules for protection of carbon steel”, **Progress in Organic Coatings 139 (2020) 105445. I.F=3.420.**
24. Mahboobeh Attaei, Mário Vale, **Abdul Shako**r , Ramazan Kahraman ,M. Fátima Montemor, Ana C. Marques, “Hybrid shell microcapsules containing isophorone diisocyanate with high thermal and chemical stability for autonomous self-healing of epoxy coatings”, **APPL. POLYM. SCI. (2019), DOI: 10.1002/APP.48751. (I.F=2.188).**
25. Shoaib Mallick, Zubair Ahmad, Karwan Wasman Qadir, Abdul Rehman, **Rana Abdul Shako**r, Farid Touati, and S. A. Al-Muhtaseb, “Effect of BaTiO<sub>3</sub> on the sensing properties of PVDF composite-based capacitive humidity sensors”, **Accepted, Ceramic International, (2019). (I.F=3.450)**
26. Nisar, Umair; Petla, Ramesh Kumar; J. A. Al-Hail, Sara ; **Shako**r, **Abdul Rana**; Essehli, rachid; Kahraman, Ramazan; Al-Qaradawi, Siham; Kim, Do Kyung; Belharouak, Ilias; Amin, Md Ruhul, “ Understanding the Origin of the Ultrahigh Rate Performance of a SiO<sub>2</sub>-Modified LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> Cathode for Lithium-Ion Batteries”, **ACS Applied Energy Materials, 2, 10 (2019) 7263-7271. (I.F=4.473).**
27. Adnan Khan, Mostafa H. Sliem, Ayman Arif , Mohammed A. Salih, **R. A. Shako**r\* , M. F. Montemor, Ramazan Kahraman, Said Mansour , Aboubakr M. Abdullah, Anwarul Hasan, “Polyelectrolyte multilayered polymeric microcapsules as smart additives for corrosion inhibition of carbon steel”, **Progress in organic coatings, 137 (2019) 105319. (I.F=3.420)**
28. Sehrish Habib, Adnan Khan, Muddasir Nawaz, Mostafa H. Sliem, **R. A. Shako**r\* , Ramazan Kahraman, Aboubakr M. Abdullah, Atef Zekri, “Self-Healing Performance of Multifunctional Polymeric Smart Coatings”, **Polymers, 11 (2019), 1519. (I.F=3.164).**
29. Y. Morozov, L. M. Calado, **R. A. Shako**r, R. Raj, R. Kahraman, M.G.Taryba, M.F.Montemor, “Epoxy Coatings Modified With a New Cerium Phosphate Inhibitor for Smart Corrosion Protection of Steel”, **Corrosion Science, 159 (2019) 108128. (I.F=6.355)**
30. Roma Raj, Y. Morozov, L.M. Calado, M.G. Taryba, R. Kahraman, **A. Shako**r, M.F. Montemor, “ Inhibitor loaded calcium carbonate microparticles for corrosion protection of epoxy-coated carbon steel”, **Electrochimica Acta 319 (2019) 801e812. (I.F=5.383)**
31. Adnan Khan, Fareeha Ubaid, Eman M. Fayyad, Zubair Ahmad, **R. A. Shako**r\* , M. F. Montemor, Ramazan Kahraman, Said Mansour, Mohammad K. Hassan, Anwarul Hasan, and Aboubakr M. Abdullah, “Synthesis and properties of polyelectrolyte multilayered microcapsules-reinforced smart coatings”, **c, (2019), pp: 1-16, <https://doi.org/10.1007/s10853-019-03761-9>. I.F=3.442**
32. Muddasir Nawaz, Noor Yusuf, **R. A Shako**r\* , Fareeha Ubaid, Sehrish Habib, Zubair Ahmad, Ramazan Kahraman, Said Mansour, Wei Gao, “ Development and properties of polymeric nanocomposite coatings”, **Polymers, 11 (2019), 852. I.F= 3.164.**
33. Fareeha Ubaid, A. Bahgat Radwan, Nazal Naeem, **R. A. Shako**r\* , Zubair Ahmed, M. F. Montemor, Ramazan Kahraman, Aboubakr M Abdullah, Ahmed Soliman "Multifunctional self-healing polymeric nanocomposite coatings for corrosion inhibition of steel”, **Surface and Coating Technology, 372 (2019) 121-133. I.F=3.192.**

34. P. Ramesh Kumar, Aziz Kheireddine, Umair Nisar, R. A. Shakoore, Rachid Essehli, Ruhul Amin, Ilias Belharouak, “ $\text{Na}_4\text{MnV}(\text{PO}_4)_3\text{-rGO}$  as Advanced cathode for aqueous and non-aqueous sodium ion batteries”, **Journal of Power Sources**, **429** (2019) 149-155. (I.F=7.467).
35. Arti Mishra, Zubair Ahmad, Farid Touati, **R. A. Shakoore**, Mohammad Khaja Nazeeruddin, One-dimensional facile growth of  $\text{MAPbI}_3$  perovskite micro-rods”, **RSC Advances**, **9**, (2019), 11589 – 11594. (I.F=3.049).
36. Manohar Reddy Mattli , **Abdul Shakoore\***, Penchal Reddy Matli and Adel Mohamed Amer Mohamed, “Microstructure and compressive behavior of  $\text{Al-Y}_2\text{O}_3$  nanocomposites prepared by microwave-assisted mechanical alloying”, **Metals** (2019), **9**, 414, 1-9. (I.F=2.259).
37. Shoaib Mallick, Zubair Ahmad, Farid Touati, **R. A. Shakoore**, “Improvement of humidity sensing properties of  $\text{PVDF-TiO}_2$  Nanocomposite films using acetone etching”, **Sensors and Actuators: B Chemical** **288** (2019) 408-413. (I.F=6.393).
38. Fareeha Ubaid, Nazal Naeem, **R. A. Shakoore\***, Ramazan Kahraman, aid Mansour<sup>3</sup>, Atef Zikri, “Effect of concentration of DOC loaded  $\text{TiO}_2$  nanotubes on the corrosion behavior of smart coatings”, **Ceramic International**, **45** (2019) 10492-10500. (I.F=3.450).
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## **2. Conference Publications & Presentations (96)**

1. **Aisha Abdul Ouddus, Tariq H.A., Shakoore, R. A.\***, James J., Nisar U., Kahraman R., "Synthesis and characterization of composite electrode  $\text{LiMn}_2\text{O}_4\text{-LiMn}_{1.75}\text{Al}_{10.25}\text{O}_4$  materials for Li-ion batteries", Poster presentation in **2<sup>nd</sup> webinar on Material Science and Nanotechnology, November 18-19, 2020.**
2. **Muddasir Nawaz**, Sehrish Habib, Adnan Khan, R. A. Shakoore, Ramazan Kahraman, "Cellulose Microfibers as a smart carrier for anticorrosive pigment in the corrosion protection of steel", **NACE European corrosion management Virtual conference, 17-18 November 2020.**
3. **Osama Fayyaz, R.A. Shakoore\***, Elsadig Ahmed, Ramazan Kahraman, Aboubakr M Abdullah, Khaled Youssef, Shahid Rasul, Kashif Khan, Mohammad Rashed Iqbal Faruque, Wei Gao, Fatima Montemor. "Properties of Pulse-electrodeposited Ni-P-ZrO<sub>2</sub> nanocomposite coatings" Materials Info 2020, November 09-10, 2020, Virtual congress held on materials science and engineering.

4. **Bahgat, A., Shakoor R. A\***, Abdullah, A., "Multifunctional self-healing polymeric nanocomposite coatings for corrosion inhibition of steel", Qatar University Annual Research Forum and Exhibition (QUARFE 2020), Doha, 28 October 2020, DOI: <https://doi.org/10.29117/quarfe.2020.0001>.
5. **Habib S.**, Fayyed E., Nawaz M., Khan A., **Shakoor. A\***, Karahman R., Abdullah A., "Self-healing performance of smart coatings modified with different corrosion inhibitors", Qatar University Annual Research Forum and Exhibition (QUARFE 2020), Doha, 28 October 2020, DOI: <https://doi.org/10.29117/quarfe.2020.0002>.
6. **Nawaz M.**, Habib S., Khan A., **Shakoor R. A\***, Kahraman R., "Cellulose microfibers (CMFs) reinforced smart self-healing polymeric composite coatings for corrosion protection of steel", Qatar University Annual Research Forum and Exhibition (QUARFE 2020), Doha, 28 October 2020, DOI: <https://doi.org/10.29117/quarfe.2020.0003>.
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17. Muddasir Nawaz, Sehrish Habib, Adnan Khan, **Abdul Shakoor\***, Ramazan Kahraman, "Cellulose microfibers (CMFs) reinforced smart self-healing polymeric composite coatings for corrosion protection of steel", **Virtual EUROCORR (2020), 7-11 September 2020.**
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19. Delivered talk in the Research Output Seminar (ROS) titled, "Development of high performance metastable aluminum composites using microwave sintering approach" organized by **Qatar National Research Fund (QNRF) dated 26 June 2020.**
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27. Umair Nisar, Ruhul Amin, **Rana Abdul Shakoor\***, Rachid Essehli, Siham Al-Qaradawi, Ramazan Kahraman, Synthesis and Electrochemical Characterization of ZrO<sub>2</sub> Coated Lithium-rich Li<sub>1.2</sub>Ni<sub>0.16</sub>Mn<sub>0.56</sub>Co<sub>0.08-x</sub>Cr<sub>x</sub>O<sub>2</sub> Cathodes", IGCGW-2019, 22-25 April 2019, Doha, Qatar.
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35. Saoud M. A. Mesallam<sup>b</sup>, Umair Nisar, R. A. Shakoor<sup>\*a</sup>, Ramazan Kahraman, , Siham Al-Qaradawi "Performance High Voltage Spinel LiNi<sub>0.5</sub>Mn<sub>1.5</sub>O<sub>4</sub> Synthesized Using Microwave Sintering Approach", **Advanced Functional Materials Congress (AFMC), 24-27 March 2019, Stockholm, Sweden.**
36. Muddasir Nawaz, Noor Yusuf, **R. A. Shakoor**<sup>1,\*</sup>, Fareeha Ubaid, Sehrish Habib, Zubair Ahmad, Ramazan Kahraman, Smart polymeric nanocomposite coatings: Effect of pH of environment", **Advanced Functional Materials Congress (AFMC), 24-27 March 2019, Stockholm, Sweden.**
37. Suzan Ahmed, Salma Gama Selim, Nuri Akhter Ismail, Fareeha Ubaid, **R. A. Shakoor**<sup>\*</sup>, M. F. Montemor, Ramazan Kahraman, "Influence of encapsulated TiO<sub>2</sub> nanotubes on corrosion behavior of smart coatings" **2<sup>nd</sup> Youth Research Forum 2018, 27-28 Nov. 2018, Qatar University, Doha, Qatar.**
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51. M. Penchal Reddy, F. Ubaid, M.A. Himyan, **R.A. Shakoor\***, “Microstructure and Mechanical Behavior of Microwave Sintered Cu<sub>50</sub>Ti<sub>50</sub> Amorphous Reinforced Al Metal Matrix Composites”, **Materials Science and Engineering Symposium, 26 Feb 2018, Qatar University, Qatar.**
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53. M. M. Yusuf, A. Bahgat, **R. A. Shakoor\***, R. Kahraman, M. F. Montemor, “Novel Ni Based Duplex Coatings for Anticorrosion Applications”, **232 ECS Meeting, October, 1-5, 2017, Gaylord National Resort and Convention Center, USA.**
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55. Okonkwo Paul C, **R. A. Shakoor\***, A. M. A. Mohamed, “Synergistic Erosion-Corrosion Behavior of API X120 Steel”, **7<sup>th</sup> APMAS-2017, International Advances in Applied Physics and Materials Science Congress & Exhibition (APMAS, (2017), 22-26 April (2017), Oludeniz, Turkey.**
56. P. Reddy, F. Ubaid, R.A Shakoor, M. A Najeeb, “Performance of hot extruded Al- Al<sub>2</sub>O<sub>3</sub> metal matrix composites synthesized through microwave sintering process”, **International Conference on Geoscience, Energy and Materials (I-GEM), April 10-12, (2017), Kuala Lumpur, Malaysia.**
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60. Okonkwo Paul C, **R. A. Shakoor,** A.M.A. Mohamed, “The effect of particle speed and impact angle on the erosion of AISI 1018 pipeline steel” , **2017 The 7<sup>th</sup> international conference on advanced materials research (ICAMR-2017), Hong Kong, January 20-22, 2017.**
61. Umesh S. Waware, **R. A. Shakoor\***, Ramazan Kahraman, “Corrosion Behavior of Electrodeposited Ni-B Coatings Modified with SiO<sub>2</sub> Particles”, **Gas processing Symposium 2016 (GPS 2016), 28-29 Nov. Doha, Qatar.**
62. Okonkwo Paul C, **R. A. Shakoor\***, Ahmed Soliman, A.M.A. Mohamed, Mohammed Al-Marri, “Effect of temperature on the corrosion behavior of API X100 pipe line steel in 3.5% NaCl aqueous solution containing H<sub>2</sub>S”, **Gas processing Symposium 2016 (GPS 2016), 28-29 Nov. Doha, Qatar.**
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70. Okonkwo Paul C, **R.A. Shakoor\***, A.M.A. Mohamed, "Corrosion Behavior of Newly Developed API-X120 Steel in Sweet Environment Exposed to High Temperature, **Qatar UK Research Networking Program, 8-10 May 2016, Doha, Qatar.**
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76. Ameera Khudair, Amara Rehman, Yumna Ayesh, Fareeha Ubaid, Ahmad Bahgat Radwan, R. A. Shakoor\*, Effect of Cooling Rate On Properties of 6060 Aluminum Alloys Produced at Qatalum', **Materials Science and Engineering Symposium, 10 March (2016), Doha, Qatar.**
77. Moinuddin Mohammed Yusuf, R. A. Shakoor\* Ahmed Bahgat Radwan, "Properties of Duplex Ni-B/Ni-P -CeO<sub>2</sub> Nanocomposite Coatings", **Materials Science and Engineering Symposium, 10 March (2016), Doha, Qatar.**
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96. **R. A. Shako**, F. Ahmad Khalid, “Thermomechanical and deformation behavior of iron based shape memory alloys”. **International Symposium on Advanced Materials (ISAM) 13-17 June (2007).**

## **PATENTS (02)**

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## **BOOK CHAPTERS (05)**

1. Adnan Khan, M. Manohar Reddy, M. Penchal Reddy, **R. A. Shakoor\***, M. Gupta, "Development and properties of amorphous particles reinforced Al matrix nanocomposites", **Encyclopedia of Materials: Composites, Elsevier Publishing, <https://doi.org/10.1016/B978-0-12-819724-0.00002-1>**
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3. M. Imran Khan, M.M. Zagho and **R.A. Shakoor\***, "A Brief Overview of Shape Memory Effect in Thermoplastic Polymers", Edited by Deepalekshmi Ponnamma, Kishor Kumar Sadasivuni, John-John Cabibihan, Mariam Al-Ali Al-Maadeed, **Springer Series on Polymer and Composite Materials, 18 March (2017), ISBN: 978-3-319-50423-0 (Print) 978-3-319-50424-7 (Online).**
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5. **Ramazan Kahraman and R. A. Shakoor**, Teaching "Design-for-Corrosion" to Engineering Undergraduates: A Case Study of Novel Ni-B Coatings for High Wear and Corrosive Applications ". Edited by Hwee Lim, IGI Global Publisher, **Published IGI (2015).**

#### **RESEARCH GRANTS AND FUNDINGS (23)**

1. **Lead Principal Investigator of the project, "Functional grade nanocomposite coatings for oil and gas industry", QU IRCC Grant, IRCC-2020-006, Funded amount, 136000.0 USD, 15<sup>th</sup> June 2020 to 30<sup>th</sup> Dec. 2021.**
2. **Principal Investigator of the project, "Development of sustainable thermos-electric materials from earth-abundant, cost effective and nontoxic resource", QU collaborative grant # 139, Awarded (2019), Funded amount QR285000.0**
3. **Principal Investigator of the project, "Treatment of Carbon Dioxide and Reverse Osmosis (RO) Brine in Seawater Desalination Plant Using Solar-Osmotic-Engineered Electrochemical Process (SOE-EP)", QU-IRCC Grant#179, Awarded (2019), Funded amount, 112000. USD.**
4. **Principal Investigator of the project of the project, off-Grid power supply solution for portable cabins using solar PV system for Qatar, QU Marubeni Grants-CTP, Grant #228, awarded 2019, Funded amount QR 560000.0**
5. **Principal Investigator of the project, Development of Bi-Polar Electrode Materials for Symmetric Sodium-ion Batteries", QU collaborative Grant #159, Awarded (2019), Funded amount, QR285000.0**
6. **Primary research mentor of the project, "Development of MXene based High Capacity Anode Materials for Lithium Ion Batteries (LIBs)", QNRF Project Number, UREP25-007-2-005. Awarded (2019), Funded amount 30000.0 USD.**
7. **Consultant of the project, "From waste to wealth: Eco friendly production of super-sorbents from plastic waste", Funding awarded by Qatar National Research Fund (QNRF) through National Priority Research Program NPRP-12S-0325-19443, Total amount 600000.0 USD.**
8. **LPI of the project, "Synthesis and Characterization of Pulse Electrodeposited Ni-P-TiC Nanocomposite Coatings", Qatar University student grant (QUST-2-CAM-2019-7), QR 20000.0, 25/8/2019 till 28/11/2019.**
9. **PI-of the project "Advanced Reconfigurable Multiphase Motor Drive System for Electric Vehicle Applications", QUHI-CENG-19/20-2), High Impact Grant (sponsored by Qatar University), Total funded amount 540000.0 QR, (Feb. 2019-Feb. 2021).**

10. **PI- of the Project “Multiple Output Contactless Inductive Power Transfer System for Electric Vehicle Battery Charging Station”, Project ID: 144, Collaborative research Grant (sponsored by Qatar University). Total funded amount 270000.0 QR, (Feb. 2019-Feb. 2021).**
11. **LPI-OU Student Grant, “Polyelectrolyte Multilayered Microcapsules Reinforced Smart Coatings for Corrosion Protection in the Oil and Gas Industry”, QUST-1-CAM-2019-10, 06/02/2019 to 2/05/2019. (QR10,000.0).**
12. **Lead Principal Investigator (LPI) of the project, “Optimization of high voltage cathodes and electrolytes of lithium ion batteries for grid applications in Qatar climate conditions”, Funding awarded by Qatar National Research Fund (QNRF) through National Priority Research Program (NPRP11S-1225-170128), Total amount funded: 600000 USD, (Nov. 2017-Nov. 2020).**
13. **Primary investigator (PI) of the project, “Smart Single Layer polyolefine coatings for corrosion protection of steel parts (S2Coat), Funding awarded by Qatar National Research Fund (QNRF) through National Priority Research Program (NPRP11S-1226-170132), Total amount funded: 599832.0 USD, (Nov. 2017-Nov. 2020).**
14. **Primary research mentor of the project, “Novel high potential cathode materials for next generation lithium ion batteries”, QNRF Project Number, UREP22-008-2-004. Awarded (2018), Funded amount 30000.0 USD valid from 01 Nov. 2018 to 30 Oct. 2019.**
15. **Lead Principal Investigator (LPI), Multifunctional Coatings (MFCs) for Protection of Rusted Operational Pipelines in Oil and Gas Industry, QUCG-CAM-2018\2019-3. The approved funds for year 1 is QR 300000.0 valid from 14/01/2018 until 31\12\2019.**
16. **Primary research mentor of the project, Development of Ni-P-ZrO<sub>2</sub> nanocomposite coatings through pulse electro-deposition process”, QNRF Project Number, UREP21-108-2-047. Awarded (2017), Funded amount 20000.0 USD.**
17. **Primary research mentor of the project, “Fabrication of thermo-electric generator (TEG) and integration with photovoltaic (PV) module for enhanced efficiency in Qatar environment”, QNRF Project Number, UREP21-144-2-056. Awarded (2017), Funded amount 24998.0 USD.**
18. **LPI of the project, “Smart corrosion protection strategies for steel materials in the oil and gas industry”, Funding awarded by Qatar National Research Fund (QNRF) through National Priority Research Program (NPRP No.: 9-080-2-039), Total amount funded:706335.0 USD, 01 Nov. (2016)- 01 Nov. (2019).**
19. **LPI of the project “Development of High Performance Metastable Aluminium Composites Using Microwave Sintering Approach” Funding awarded by Qatar National Research Fund (QNRF) through National Priority Research Program (NPRP No.: 7-159-2-076), Total amount funded: 858676.0 USD, (Feb. 2014-Jan. 2018).**
20. **Co-LPI of the project “Mechanical Properties and Erosion-Corrosion of High Strength Steels for Oil and Gas Transmission Pipelines in H<sub>2</sub>S Environment” Funding awarded by QNRF through (NPRP-6 027- 2-010), Total amount funded; 953824 USD, (June 2014-May 2017).**
21. **PI of the under graduate project, “Investigating corrosion performance of Q-Coat epoxy coated rebars in Gulf environments”, Funding awarded by Qatar Steel (M029), Total amount 616000.0 USD, 2014-2017.**
22. **PI of the under graduate project, “Improve microstructure for proper Thermo-Mechanical Treatment of 6061 alloys”, Funding awarded by Qatalum/Hydro (M034), Total amount 27000.0 USD, Nov. 2014-Oct. 2015.**
23. **LPI of the undergraduate research project, “Study on corrosion, welding and electrical properties of aluminum alloys”, Funding awarded by Qatalum/Hydro (M037), Total amount 27000.0 USD, Nov. 2015-Dec. 2016.**

### **GRADUATE STUDENTS SUPERVISION (06)**

1. Norhan Ashraf Ismail, Registered Master student at Qatar University, Mechanical and Industrial Engineering (**2018-till now**), **Co supervisor.**
2. Osama Fayyaz, Registered Master student at Qatar University, Mechanical and Industrial Engineering (**2018-till now**), **Co supervisor.**

3. Mr. Adnan Khan, Registered Master student at Qatar University, Mechanical and Industrial Engineering **(2017-2018), Co supervisor.**
4. Charifa Ahmed Mannah, Registered Master student at Qatar University, Materials Science and Technology program (2017-2018). **Co supervisor.**
5. Zahoor Ahmed, Registered PhD candidate at UNSW, Australia and USM, Malaysia, working on development of high performance cathode materials for lithium/sodium ion batteries (2015- till now). **External Supervisor.**
6. Mr. Khuram Shahzad, Registered PhD candidate at NUST, Pakistan, working on the synthesis and characterization of smart functional nanocomposite coatings (2017-Till now). **External Supervisor.**

### **EDITORIAL MEMBERSHIP:**

1. Member of editorial board of Journal, Advanced Materials Science.
2. Member of editorial board of the Open Materials Engineering Journal.
3. Member of editorial board of the journal, Advanced Materials Proceedings

### **TECHNICAL SKILLS:**

- ✚ Autoclaves for hydrothermal synthesis of advanced materials
- ✚ Mechanical Testing (hardness, tenco, creep, fatigue, creep etc)
- ✚ NDT Techniques (MagnaFlux, Ultrasonic, Radiography, Dye Penetrant),
- ✚ Welding Techniques (SMAW, GTAW, GMAW etc)
- ✚ Characterization techniques (SEM, XRD, TEM, XPS, FTIR and Optical Microscopy, Wonatech Battery Cycler, Potentiostat).
- ✚ Thermal analysis (Dilatometry, DTA, DSC etc).
- ✚ Injection Molding Machine, Ball Mill, Compaction Machine, Heat treatment Furnaces, Induction and Arc Melting, Casting Processes, Surface treatments (Plating techniques), Forgings.
- ✚ Manufacturing and processing of high speed steels (HSS)and carbide tips (TiC, TiMoC etc)

### **Professional Membership**

- ✚ International Association of Advanced Materials (IAAM)- 6742319743427
- ✚ Paksitan Engineering Council (PEC)-MET/1035.
- ✚ TMS
- ✚ Paksitan Institute of Metallurgical Engineers (PIME)

### **LANGUAGES:**

- ✚ English (Excellent-reading/writing/speaking)
- ✚ Urdu (Excellent-reading/writing/speaking)
- ✚ Punjabi (Excellent speaking)
- ✚ Korean(fair)
- ✚ Arabic (fair)

### **EXTRA CO- CIRUCULAR ACTIVITIES:**

- ✚ Football

- ✚ Table tennis
- ✚ Cricket

### **LIST OF REFEREES:**

- ✚ Dr. Nasser Abdullah N J Alnuaimi  
(Director, Center for Advanced Materials, Qatar University, Doha, Qatar, ([anasser@qu.edu.qa](mailto:anasser@qu.edu.qa)))
  - ✚ Prof. Mariam A. Al-Madeed  
VP for reserach, Qatar University, Doha, Qatar, ([m.alali@qu.edu.qa](mailto:m.alali@qu.edu.qa))
  - ✚ Prof. Ramazan Kahraman  
(Chairman, Dept. of Chemical Engineering, Qatar University, Doha, Qatar, [ramazank@qu.edu.qa](mailto:ramazank@qu.edu.qa))
  - ✚ Prof. Kisuk Kang (Director-AEM Lab.)  
(AEM Lab., DepT.of Mat. Sci. and Eng. SNU, S. Korea, [matlgen1@snu.ac.kr](mailto:matlgen1@snu.ac.kr))
  - ✚ Prof. Jangwook Choi (Director-NEST Lab.)  
(NEST Lab., Graduate School of EEWS, KAIST, [jangwookchoi@kaist.ac.kr](mailto:jangwookchoi@kaist.ac.kr))
  - ✚ Prof. Wei Gao  
(Dept. Chemical and Materials Engineering, Uinversity of Auckland, New Zealand  
([w.gao@auckland.ac.nz](mailto:w.gao@auckland.ac.nz)))
  - ✚ Prof. Dr. Fazal Ahmad Khalid, SI (PhD Supervisor)  
(Vice Chancellor, UET, Lahore, Pakistan, [vc@uet.edu.pk](mailto:vc@uet.edu.pk))
  - ✚ Prof. Dr. Amir Azam Khan (PhD course instructor)  
(Dept. of Mechanical and Manufacturing Eng. -UNIMAS-Malaysia, [akamir@feng.unimas.my](mailto:akamir@feng.unimas.my))
  - ✚ Dr. Fida Muhammad (Ex colleague)  
(Dean Faculty of Mat. Sci. and Eng., GIKI, Pakistan, [mfida@giki.edu.pk](mailto:mfida@giki.edu.pk))
-