

Mobile # +97466125107

Emai : shakoor@qu.edu.qa, shakoorr7@hotmail.com

Date of Birth: 23 April 1967. Natioanlity: Pakistani

Dr. Abdul Shakoor

*Research Fellow/Assistant Professor
Center for Advanced Materials (CAM)
Office of VP for Research
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 corrosive applications.
3. Synthesis and characterization of advanced materials- shape memory alloys.
4. Development of Dye Sensitized Solar Cells (DSSC) and Thermoelectric Generators (TEGs)

WORK EXPERIENCE:

- 01/10/2014 till now** **Research Fellow/Assistant Professor-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 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-GIKI 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:

- ✚ 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 3rd 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.
- ✚ Visiting research fellow at Dept. of Chemical and Materials Engineering, University of Auckland, New Zealand.
- ✚ 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.
- ✚ Awarded three years Qatar National Research Fund (QNRF) through National Priority Research Program (NPRP) to develop novel coating for oil/gas and sea water desalination.
- ✚ Awarded three years Qatar National Research Fund (QNRF) under National Priority Research Program (NPRP) to develop novel 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 $\text{NaFePO}_4/\text{NaMnPO}_4/\text{NaCoPO}_4$.
- ✦ Effect of particle size and carbon coating on the electrochemical behavior $\text{Na}_2\text{CoPO}_4\text{F}$.
- ✦ Synthesis, structural evaluation and electrochemical behavior of $\text{Na}_{1.5}\text{VOPO}_4\text{F}_{0.5}$.
- ✦ A combined first principle and experimental study on the synthesis, structural evaluation and electrochemical response of $\text{Na}_3\text{V}_2(\text{PO}_4)_2\text{F}_3$.
- ✦ Mechanochemical synthesis and electrochemical characterization of Na_3FeF_6 in sodium ion battery and lithium ion battery.
- ✦ Electrochemical synthesis of sodium intercalated multicomponent olivine ($\text{NaFe}_{1/3}\text{Mn}_{1/3}\text{Co}_{1/3}\text{PO}_4$) cathodes and their electrochemical response in Sodium Ion battery.
- ✦ Hydrothermal synthesis of $\text{Na}_3\text{Fe}_2(\text{PO}_4)_2\text{F}_3$ and its characterization.
- ✦ Hydrothermal synthesis of $\text{Na}_3\text{Mn}_2(\text{PO}_4)_2\text{F}_3$ and its characterization.
- ✦ Synthesis of novel cathode $\text{LiNa}_{0.5}\text{VOPO}_4\text{F}_{0.5}$ for high performance lithium rechargeable batteries.
- ✦ Synthesis of multicomponent pyrophosphates ($\text{Li}_2\text{Fe}_{1/3}\text{Mn}_{1/3}\text{Co}_{1/3}\text{P}_2\text{O}_7$) and study of its structural changes during lithiation/delithitation 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_4 and study of their electrochemical activity in lithium rechargeable battery.
- ✦ Solid state synthesis of LiMnPO_4 and effect of doping of iron and niobium on its electrochemical performance.
- ✦ Solid state synthesis of LiMnPO_4 and effect of doping of vanadium and niobium on its electrochemical performance.
- ✦ Solid state synthesis of LiMnPO_4 and effect of doping of iron and cobalt on its electrochemical performance.
- ✦ Solid state synthesis of LiMnPO_4 and effect of doping of niobium on its electrochemical performance.
- ✦ Synthesis and electrochemical behavior of $\text{Na}_2\text{FeP}_2\text{O}_7$ in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of $\text{Na}_2\text{MnP}_2\text{O}_7$ in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of $\text{Na}_2\text{CoP}_2\text{O}_7$ in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of $\text{Na}_2\text{Fe}_{1/2}\text{Mn}_{1/2}\text{P}_2\text{O}_7$ in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of $\text{Na}_2\text{Fe}_{1/3}\text{Mn}_{1/3}\text{Co}_{1/3}\text{P}_2\text{O}_7$ in sodium rechargeable batteries.
- ✦ Synthesis and electrochemical behavior of $\text{Li}_2\text{Fe}_{1/3}\text{Mn}_{1/3}\text{Co}_{1/3}\text{P}_2\text{O}_7$ in Lithium rechargeable batteries.
- ✦ Ion exchange synthesis of $\text{LiNaFe}_{0.5}\text{Mn}_{0.5}\text{P}_2\text{O}_7$ high performance cathodes for lithium ion batteries.
- ✦ Off stoichiometric synthesis of $\text{Na}_2\text{VP}_2\text{O}_7$ and its effect on its electrochemical properties.
- ✦ Topochemical synthesis of $\text{Li}_2\text{MnP}_2\text{O}_7$: A feasibility study.

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

- ✦ Ni-P-TiO₂.....Sol. enhanced electrodeposited/electroless coatings.
- ✦ Ni-P-ZrO₂.....Sol. enhanced electrodeposited/electroless coatings.
- ✦ Ni-P-Cr₂O₃.....Sol. enhanced electrodeposited/electroless coatings.
- ✦ Ni-P-AlN..... Electroless Ni based AlN nanocomposite coatings.
- ✦ Ni-B- TiO₂.....Sol. enhanced electrodeposited/electrodeposited coatings
- ✦ Ni-B- ZrO₂.....Sol. enhanced electrodeposited/electrodeposited coatings
- ✦ Ni-B- Al₂O₃..... Sol. enhanced electrodeposited/electrodeposited coatings
- ✦ Ni-B-CeO₂..... 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: (40)

1. International Journal Publications: (* corresponding author)

1. K. M. Zadeh, **R. A. Shakoor***, A. Bahgat Radwan, “Structural and Electrochemical Properties of Electrodeposited Ni-P nanocomposite Coatings Containing Mixed Ceramic Oxide Particles”, **Accepted, Int. Journal of Electrochem. Sci. 01 June (2016).**
2. Ali Sephar Shikoh, Zubair Ahmad, Farid Touati, , **R. A. Shakoor**, N.J. Al-Thani,, Zhaozhao Zhu, Trent Mankowski, , Mohieddine A. Benammar, , Masud Mansuripur, Charles M.Falco “Integration of the inexpensive CuNWs based transparent counter electrode with Dye Sensitized Photo Sensors”, **RSC Advances, (2016) 6 53123.**
3. Zubair Ahmad, Khasan Karimov; Farid Touati; SA Moiz; Rashid Ali; **R.A. Shakoor**; N. J. Al-Thani, “Impact of moisture contents on the performance of organic bi-layer ITO/OD thermo-electric cells”, **Accepted, May 20 (2016), Journal of Materials Science: Materials in Electronics.**
4. Zubair. Ahmad, Farid Touati, **R. A. Shakoor**, N.J. Al-Thani, “ “Study of a ternary blend system for bulk heterojunction thin film solar cells”, **Accepted, April (2016), Chinese Physics B.**
5. Mansoor Ani Najeeb, Shahino Mah Abdullah,Fakhra Aziz, Zubair. Ahmad, Saqib Rafique, S. Wageh, Ahmed A. Al-Ghamdi, Khaulah Sulaiman,Farid Touati, **R. A. Shakoor**, N.J. Al-Thani, “ structural, morphological and optical properties of PEDOT:PSS/QDs nano-composite films prepared by spin-casting’ **Physica E, 83 (2016), 64-68.**
6. M. Penchal Reddy, **R. A. Shakoor***, A. M. M. Adel, M. Gupta, Q. Huang, “Structural and magnetic studies of La₂BMnO₆ (B=Ni and Co) nanoparticles prepared by microwave sintering approach”, **Materials Chemistry and Physics, 177 (2016) 346-352.**
7. Zubair Ahmad, Qayyum Zafar, Farid Touati, **R. A. Shakoor**, N.J. Al-Thani “Study of π -conjugation effect of organic semiconductors on their optical parameters”, **Optical Materials 54 (2016) 94-97.**

8. **R. A. Shakoore***, Ramazan Kahraman, Yuxin Wang, Wei Gao, "Synthesis, characterization and applications of Ni-B electroless coatings-A review", **International Journal of Electrochemical Science, 11 (2016) 2486 – 2512.**
9. **Rana A. Shakoore***, Chan Sun Park, Arsalan A. Raja, Jaeho Shin, Ramazan Kahraman, "Mixed Iron-Manganese Based Pyrophosphate Cathode, $\text{Na}_2\text{Mn}_{0.5}\text{Fe}_{0.5}\text{P}_2\text{O}_7$ for Rechargeable Sodium Ion Batteries", **Physical Chemistry Chemical Physics 18 (2016) 3929-3935.**
10. M. Penchal Reddy, **R. A. Shakoore***, A. M. M. Adel, M. Gupta, Q. Huang, "Effect of sintering temperature on the structural and magnetic properties of MgFe_2O_4 ceramics prepared by spark plasma sintering", Accepted in Journal of **Ceramics International 42 (2016) 4221-4227.**
11. Okonkwo Paul C, **R. A. Shakoore**, Essam Ahmed, A.M.A. Mohamed, "Erosive Wear Performance of API X42 Pipeline Steel", Accepted in the Journal of "**Engineering Failure Analysis**", **60 (2016) 86-95.**
12. R. A. Shakoore*, Ramazan Kahraman, Arsalan A. Raja, "Thermal insitu analyses of multicomponent pyrophosphate cathodes materials", **Int. J. Electrochem. Sci., 10 (2015) 8941-8950.**
13. Yuxin Wang, See Leng Tay, Shanghai Wei, Chao Xiong, Wei Gao, **R. A. Shakoore**, Ramazan Kahraman, "Microstructure and properties of sol-enhanced Ni-Co-TiO₂ nano-composite coatings on mild steel", **Journal of Alloys and Compounds, 649 (2015) 222-228.**
14. A. Bahgat Radwan, **R. A. Shakoore***, Anton Popelka, "Improvement in Properties of Ni-B Coatings by the Addition of Mixed Oxide Nanoparticles", **International Journal of Electrochem. Sci. 10 (2015) 7548-7562.**
15. Joo-Seong Kim, Dong-Joo Yoo, Jaeyun Min, **Rana A. Shakoore**, Ramazan Kahraman and Jang Wook Choi, "Poreless Separator and Electrolyte Additive for Lithium–Sulfur Batteries with High Areal Energy Densities", **CHEMNANOMAT. Communication, Published on line DOI: 10.1002/cnma.201500055.**
16. **R. A. Shakoore**, Ramazan Kahraman, Umesh Waware, Yuxin Wang, Wei Gao, "Properties of electrodeposited Ni-B-ZrO₂ composite coatings", **Int. J. Electrochemical Sci. 10 (2015) 2110-2119.**
17. Yuxin Wang, Xin Shu, Wei Gao, **R. A. Shakoore**, Ramazan Kahraman, "Duplex Ni-P-ZrO₂/Ni-P electroless coating on stainless steel. **Journal of Alloys and Compounds, 630 (2015), 189-194.**
18. Yuxin Wang, Xin Shu, Wei Gao, **R. A. Shakoore**, Ramazan Kahraman, Pengfei Yan, Wei Lu, Biao Yan, "Microstructure and properties of nano-composite Ni-Co-TiO₂ coatings fabricated by electroplating". **International Journal of Modern Physics B 29 (2015) 154008.**
19. Jung, Dae Soo; Hwang, Tae Hoon; Lee, Ji Hoon; Koo, Hye Young; **R. A. Shakoore**; Kahraman, Ramazan; Jo, Yong Nam; Park, Min-Sik; Choi, Jang Wook, "Hierarchical Porous Carbon by Ultrasonic Spray Pyrolysis Yields Stable Cycling in Lithium-Sulfur Battery" **Nano Letters 14 (2014) 4418-4425.**
20. Shu Jen Wang, Yuxin Wang, Wei Gao, **R. A. Shakoore**, Ramazan Kahraman, "Preparation and property of Ni-B-TiO₂/Ni duplex coatings". **International Journal of Modern Physics B 29 (2015) 154002.**
21. **R. A. Shakoore**, Ramazan Kahraman, Umesh Waware, Yuxin Wang, Wei Gao, "Synthesis and properties of electrodeposited Ni-B-Al₂O₃ composite coatings." **Materials and Design 64 (2014) 127-135.**
22. **R. A. Shakoore**, Ramazan Kahraman, Umesh Waware, Yuxin Wang, Wei Gao, "Synthesis and properties of electrodeposited Ni-B-Zn ternary alloy coatings", **International Journal of Electrochemical Science, 9 (2014) 5520-5536.**
23. Yuxin Wang, Weiwei Chen, **Abdul Shakoore**, Ramazan Kahraman, Wei Lu, Biao Yan, Wei Gao, "Ni-P-TiO₂ Composite Coatings on Copper Produced by Sol-Enhanced Electroplating", **International Journal of Electrochemical Science, 9 (2014) 4384-4393.**
24. **R. A. Shakoore**, Ramazan Kahraman, Umesh Waware, Yuxin Wang, Wei Gao, "Electrodeposition of Ni-B-Zn alloy coatings and their characterization", **Accepted in the Proceedings of the 4th International Gas Processing Symposium, October 26-27 (2014), Doha, Qatar, @ 2014 Elsevier, All right reserved .**
25. Yuxin Wang, Ying Ju, **R. A. Shakoore**, Ramazan Kahraman², Wei Gao, "Nanocomposite Ni-TiO₂ coatings produced by pulsed electroplating" **Materials Research Innovations 18 (2014) S4-1102-S4-1106.**

26. **R. A. Shakoor**, Ramazan Kahraman, Umesh Waware, Yuxin Wang, Wei Gao, “ Synthesis and properties of Ni-B-CeO₂ composite coatings”, **Journal of Materials and Design**, **59** (2014), **421-429**.
27. **Rana A. Shakoor**; Park, Chan Sun; Kim, Heejin; Yang, Eunjeong; Lim, Soo Yeon; Kahraman, Ramazan; Jung, Yousung; Choi, Jang Wook, “Anomalous Manganese Activation of a Pyrophosphate Cathode in Sodium Ion Batteries: A Combined Experimental and Theoretical Study”, **Published in Journal of the American Chemical Society (JACS)**, **Jan. (2013)**, **DOI:10.1021/ja312044K**.
28. H. Kim+, **R. A. Shakoor+** (+equal contributions), C. Park, S. Y. Lim, J. S. Kim, Y. N. Jo, W. Cho, K. Miyasaka, R. Kahraman, Y. Jung, J. W. Choi, “Na₂FeP₂O₇ as a Promising Iron-based Pyrophosphate Cathode for Sodium Rechargeable Batteries: A Combined Experimental and Theoretical Study”, **J. Advanced Functional Materials**, (2012), **DOI: 10.1002/adfm.201201589**.
29. Hyung Mo Jeong, Su Yeon Lee, Weon Ho Shin,, Jun Ho Kwon, **Abdul Shakoor**, Tae Hoon Hwang, Se Yun Kim, Byung-Seon Kong, Jin-Seok Seo, Yong Min Lee, Jeung Ku Kang, Jang Wook Choi, “Silicon@porous nitrogen-doped carbon spheres through a bottom-up approach are highly robust lithium-ion battery anodes”. Published in **RSC Advances 2** (2012) **4311-4317**.
30. Y. U. Park, Dong Hwa Seo, Beyoungkook Kim, Kun Pyo Hang, Hyungsub Kim, Seungso Lee, **Rana A. Shakoor**, Keiichi Miysaka, Jean- Marie Tarascon, Kisuk Kang, “ Tailoring a fluorophosphates as 4 V cathode for lithium ion batteries”, **nature (Scientific Reports)**, (2012), **DOI:10.1038/srep 00704**.
31. **R. A. Shakoor**, Dong-HwaSeo, Hyungsub Kim, Young-Uk Park, Jongsoon Kim, Sung-WookKim,HyeokjoGwon, Seongsu Lee and Kisuk Kang, “A combined first principles and experimental study on Na₃V₂(PO₄)₂F₃ for rechargeable Na batteries”, **J. Materials Chemistry**, (2012), **DOI: 10.1039/c2jm33862a**.
32. **R. A. Shakoor**, H. Kim, W. Cho, S. Y. Lim, H. Song, J. W. Lee, J. K. Kang, Y. -T. Kim, Y. Jung, J. W. Choi, “ Site-specific Transition Metal Occupation in Multi-component Pyrophosphate for Improved Electrochemical and Thermal Properties in Lithium Battery Cathodes: A Combined Experimental and Theoretical Study”, **J. Am. Chem. Soc. (JACS)**, (2012), **134(28)**, **11740-11748**.
33. S. Y. Lim, H. Kim+, **R. A. Shakoor+** (equal contributions), Y. Jung, J. W. Choi, “Electrochemical and Thermal Properties of NASICON Structured Na₃V₂(PO₄)₃ as a Sodium Rechargeable Battery Cathode: A Combined Experimental and Theoretical Study”, **J. Electrochem. Soc.**, **2012**, 159(9), A1393-A1397.
34. **R. A. Shakoor**, SooYeon Lim, Hyungsub Kim, Kwan-Woo Nam, , Jeung Ku Kang,Kisuk Kang, Jang Wook Choi, “Mechanochemical synthesis and electrochemical behavior of Na₃FeF₆ in sodium and lithium batteries”, **J. Solid State Ionics** **218** (2012) 35–40.
35. Dong-HwaSeo, Young-Uk Park, Sung-Wook Kim, Inchul Park , **R. A. Shakoo** and Kisuk Kang, First Principles Study on Lithium Metal BorateCathodes for Li Rechargeable Batteries” , Published in the Journal of **PHYSICAL REVIEW B** **83**, 205127 (2011).
36. **R. A. Shakoor**, F. Ahmad Khalid, Kisuk Kang “Role of samarium additions on the shape memory behavior of iron based alloys”. Published in the Journal of **Matter. Sci. Eng. A** **528** (2011) 2299-2302.
37. Young-Uk Park, **R. A. Shakoor**, Kyu-Young Park, and Kisuk Kang, “ Charge/discharge Mechanism of Multicomponent olivine cathode for rechargeable Lithium Batteries”, Published in the Journal of **Electrochemical Science and Technology**, Vol. 2, No. 1 (2011), 14-19.
38. **R. A. Shakoor**, F. Ahmad Khalid, “Thermomechanical behavior of Fe-Mn-Si-Cr-Ni shape memory alloys modified with samarium” **Matter. Sci. Eng. A**, **499** (2009) **411-414**.
39. **R. A. Shakoor**, Y.-U. Park, J. Kim, D.-H. Seo, H. Gwan and Kisuk Kang, “Synthesis of NaFePO₄/NaCoPO₄ and their application to sodium batteries”Published in the Journal of the **Korean Battery Society**, Vol. 3, No. 2, (2010), pp. 86-89.
40. **R. A. Shakoor**, F. Ahmad Khalid, “Comparison of Shape Memory behavior and properties of iron based shape memory alloys containing Samarium additions”. **Matter. Sci. Eng. A**, **457** (2007) 169-172.

2. Conference Publications & Presentations (27)

1. Okonkwo Paul C, **R.A. Shakoore***, 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.**
2. Amara Rehman, Yumna Ayesh1, Moustafa Zagho1, Fareeha Ubaid1, Mufeed Odeh, **R. A. Shakoore***, “Effect of Different Homogenizing Temperatures and Cooling Rates on the Properties of 6060 Aluminum Alloys Produced at Qatalum”, **Qatar UK Research Networking Program, 8-10 May 2016, Doha, Qatar.**
3. Muhammad Awais*, Zubair Ahmad, Jolly Subash Bhadra, R.A. Shakoore,,Noora Jabor Al-Thania and Denis P. Dowling, Fabrication of NiO for the sustainable conversion of solar energy into electric and chemical energies”, **Qatar UK Research Networking Program, 8-10 May 2016, Doha, Qatar”.**
4. M. Penchal Reddy, U. Fareeha, R.A. Shakoore*, A. M.A. Mohamed, “Al-Cu Metal Matrix composites Synthesized by Microwave Sintering Approach”, **The Qatar University Annual Research Forum, 3 May (2016), Doha, Qatar.**
5. M. Penchal Reddy, U. Fareeha, **R.A. Shakoore***, A. M.A. Mohamed, “Microwave Sintering and Mechanical Behavior of Al/NiTi composites”, **Materials Science and Engineering Symposium, 10 March (2016), Doha, Qatar.**
6. Zubair Ahmad*, Abdullah Al Ashraf , Farid Touati 1, R. A. Shakoore, Jolly Bhadra2 and N. J. Al-Thani, “Flexible Thermo-electric Generator for Potential Application in Medical Instrumentations”, **Materials Science and Engineering Symposium, 10 March (2016), Doha, Qatar.**
7. Ameera Khudair, Amara Rehman, Yumna Ayesh, Fareeha Ubaid, Ahmad Bahgat Radwan, R. A. Shakoore*, Effect of Cooling Rate On Properties of 6060 Aluminum Alloys Produced at Qatalum”, **Materials Science and Engineering Symposium, 10 March (2016), Doha, Qatar.**
8. Moinuddin Mohammed Yusuf, R. A. Shakoore* Ahmed Bahagat Radwan, “Properties of Duplex Ni-B/Ni-P -CeO₂ Nanocomposite Coatings”, **Materials Science and Engineering Symposium, 10 March (2016), Doha, Qatar.**
9. Okonkwo Paul CI, **R. A. Shakoore**, A.M.A. Mohamed, Ahmed Soliman, “Corrosion Mechanism of API X80 Steel Material in Sour Environment at Different Temperatures”, **Corrosion- 2016 (NACE), , 6 -10 March (2016) Vancouver, Canada.**
10. Okonkwo Paul CI, **R. A. Shakoore***, A.M.A. Mohamed, “Effect of chloride environment on the corrosion behavior of API X80 and API X120 steels”, **METECH, 15, 27-28 Nov. 2015, Istanbul, Turkey.**
11. **R. A. Shakoore***, A.M.A Mohamed, M. Penchal Reddy, “Properties of Al-Metal Matrix Composites (AIMMCs) Synthesized Through Microwave Sintering Process”, **International Aluminum Symposium, 14 Dec. (2015), Doha, Qatar.**
12. R. A. Shakoore, Arsalan A Raja, Chanseon Park, Jang Wook Choi, Ramazan Kahraman, “Synthesis and Properties of sodium intercalated multicomponent pyrophosphate cathodes for sodium ion batteries”, **65th Canadian Chemical Engineering Conference, 4-7 Oct. (2015), Calgary, Canada.**
13. Khadija Zadeh, **R. A. Shakoore***, Synthesis and properties of Ni-P coatings”, Materials Science and Engineering Symposium 17 March (2015), Doha, Qatar.
14. **R. A. Shakoore**, Ramazan Kahraman*, Chanseon Park, Soo Yeon Lim, Jang Wook Choi, “Multicomponent Pyrophosphate as a Promising Cathode Material for Rechargeable Lithium Ion Batteries (LIBs)”, **MEMA-TMS, 11-14 January (2015), Doha, Qatar.**
15. **R. A. Shakoore**, Ramazan Kahraman*, Chanseon Park, Soo Yeon Lim, Jang Wook Choi, “Na₂Fe_{0.5} Mn_{0.5}P₂O₇ as Promising Cathode Material for Rechargeable Sodium Ion Batteries (NIBs)”. **MEMA-TMS, 11-14 January (2015), Doha, Qatar.**
16. A. Bahgat Radwan, Mariam A. Al-Madeed, **R. A. Shakoore***, “Synthesis and Properties of Ni-B-ZrO₂-Al₂O₃ Nanocomposite Coatings”, **MEMA-TMS, 11-14 January (2015), Doha, Qatar.**
17. Chan Sun Park^a, Soo Yeon Lim^a, **R. A. Shakoore^{b,*}**, Ramazan Kahraman^{b,*}, Jang Wook Choi^{a,**}, “Promising and anomalous structural and electrochemical properties of polyanionic phosphates in sodium ion batteries.” **ARC 2014, Doha, Qatar.**

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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 Cyclor, 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)

IT SKILLS

- ✚ MS Office
- ✚ Origin
- ✚ C-Prompt
- ✚ Adobe Photo Shop and other image programs
- ✚ Mat Lab
- ✚ Pro E

LANGUAGES:

- ✚ English (Excellent-reading/writing/speaking)
- ✚ Urdu (Excellent-reading/writing/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))
- ✚ Prof. Mariam A. Al-Madeed
VP for reserach, Qatar University, Doha, Qatar, (m.alali@qu.edu.qa)
- ✚ Prof. Ramazan Kahraman

(Chairman, Dept. of Chemical Engineering, Qatar University, Doha, Qatar, ramazank@qu.edu.qa)

✚ Prof. Kisuk Kang (Director-AEM Lab.)

(AEM Lab., Dept. of Mat. Sci. and Eng. SNU, S. Korea, matgen1@snu.ac.kr)

✚ Prof. Jangwook Choi (Director-NEST Lab.)

(NEST Lab., Graduate School of EEWS, KAIST, jangwookchoi@kaist.ac.kr)

✚ Prof. Wei Gao

(Dept. Chemical and Materials Engineering, University of Auckland, New Zealand

w.gao@auckland.ac.nz)

✚ Prof. Dr. Fazal Ahmad Khalid, SI (PhD Supervisor)

(Vice Chancellor, UET, Lahore, Pakistan, vc@uet.edu.pk)

✚ Prof. Dr. Amir Azam Khan (PhD course instructor)

(Dept. of Mechanical and Manufacturing Eng. -UNIMAS-Malaysia, akamir@feng.unimas.my)

✚ Dr. Fida Muhammad (Ex colleague)

(Dean Faculty of Mat. Sci. and Eng., GIKI, Pakistan, mfida@giki.edu.pk)
