

# Dr. Muhammad Asim Farid

## Assistant Professor Chemistry

Department of Chemistry, University of Education Lahore,  
Vehari Campus, Vehari 61100, Pakistan.

✉ [asim.farid@ue.edu.pk](mailto:asim.farid@ue.edu.pk), [asimfarid\\_43@yahoo.com](mailto:asimfarid_43@yahoo.com)

☎ 0092-3457437214



### QUICK LINKS



### RESEARCH INTERESTS:

Inorganic Solid State Synthesis, Perovskite Oxide Magnetic Materials, Superconductivity and Superconductors, Perovskite Solar Cells, Photocatalysis.

### WORK EXPERIENCE:

- **Assistant Professor (TTS)** Department of Chemistry, University of Education Lahore, Vehari Campus, Vehari 61100, Pakistan.  
**March 18, 2019 – Present.**
- **Assistant Professor (IPFP)** Department of Chemistry, University of Education Lahore, Vehari Campus, Vehari 61100, Pakistan.  
**December 07, 2017 – December 06, 2018.**

### ACADEMIC QUALIFICATION:

- **PhD (Inorganic Chemistry)** College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, P. R. China.

### PUBLICATIONS:

1. Ullah, S.; Hussain, A.; **Farid, M. A.**; Anjum, F.; Amin, R.; Du, S.; Zou, J.-J.; Huang, Z.-F.; Tahir, M., Sulfurization of bimetallic (Co and Fe) oxide and alloy decorated on multi-walled carbon nanotubes as efficient bifunctional electrocatalyst for water splitting. *Heliyon* **2024**, *10* (12). (Category W)
2. Qadeer, M. A.; Zhang, X.; **Farid, M. A.**; Tanveer, M.; Yan, Y.; Du, S.; Huang, Z.-F.; Tahir, M.; Zou, J.-J., A review on fundamentals for designing hydrogen evolution electrocatalyst. *J. Power Sources* **2024**, *613*, 234856. (Category W)
3. Ali, A.; **Farid, M. A.**; Amin, M.; Husain, A.; Hou, J.; Huang, Z.-F.; Du, S.; Tahir, M., Enhanced photocatalytic activities of FCNO nanoparticles on graphitic carbon nitride. *Diamond Related Materials* **2024**, 111243. (Category W)

4. **Farid, M. A.;** Ashraf, A. R.; Sarfaraz, R.; Hassan, S. U.; Naeem, N.; Naeem, H., Simultaneous Photocatalytic Degradation of Methylene Blue and Methyl Orange Using Green Synthesized  $Zn_{0.98}Mn_{0.02}O/BiOCl$  Nanocomposite. *New Journal of Chemistry*, **2023**, 48, 887–897 (Category W)
5. Kashif, M.; Fiaz, M.; Manzoor, S.; Najam-ul-Haq, M.; **Farid, M. A.;** Athar, M., Facile Synthesis of  $CoO/Sm_2O_3@UiO-66-NH_2/NF$  Composite as Efficient Photocatalysts for Oxygen Evolution Reaction. *JOM*, **2023**, 75 (12), 5420-5429. (Category W)
6. Asghar, G.; Fiaz, M.; **Farid, M. A.;** Ashiq, M. N.; Synthesis of the highly efficient catalysts  $CdZnS@MIL-53(Fe)$  and  $ZnS@MIL-53(Fe)$  and their thermally decomposed derivative for electrochemical OER activity and photodegradation of Rhodamine B dye. *International Journal of Hydrogen Energy*, **2023**, 51, 1435-1447. (Category W)
7. Hassan, S. U.; Khalid, H.; Shafique, S.; **Farid, M. A.;** Saeed, M. H.; Ali, Z.; Nazir, M. S.; Hussain, M.; Park, Y.-K., Investigating catalytic oxidative desulfurization of model fuel using hollow  $PW_{12}/TiO_2@MgCO_3$  and performance optimization via box-behnken design. *Chemosphere* **2023**, 339, 139662. (Category W)
8. Ali, A.; Amin, M.; Tahir, M.; Ali, S. S.; Hussain, A.; Ahmad, I.; Mahmood, A.; Farooq, M. U.; **Farid, M. A.,**  $g-C_3N_4/Fe_3O_4$  composites synthesized via solid-state reaction and photocatalytic activity evaluation of methyl blue degradation under visible light irradiation. *Frontiers in Materials* **2023**, 10. (Category W)
9. Zheng, X.; **Farid, M. A.;** Wang, X.; Wang, Y.; Geng, J.; Liao, F.; Sun, J.; Li, G.; Liu, L.; Lin, J., Synthesis, crystal structure, and superconductivity of  $Ba(Bi_{0.25}Pb_{0.75})_{1-x}Mg_xO_{3-δ}$ . *Solid State Communications* **2022**, 360, 115051. (Category X)
10. Fiaz, M.; Nkenku Carl, N.; Kashif, M.; **Farid, M. A.;** Riaz, N. N.; Athar, M., Development of Efficient Bi-functional  $g-C_3N_4@MOFs$  Heterojunction for Water Splitting. *RSC Advances* **2022**, 12, 32110-32118. (Category W)
11. Hassan, S. U.; Ahmad, S.; **Farid, M. A.;** Nadeem, S.; Ali, Z.; Abro, R.; Muyudin, A.; Nazir, M. S.; Hussain, M.; Park, Y.-K., Designing polyoxometalate based hybrid catalysts for efficient removal of hazardous sulfur from fuel via heterogeneous oxidative desulfurization. *Journal of Industrial and Engineering Chemistry* **2022**, 116, 438-446. (Category W)
12. **Farid, M. A.;** Chen, Y.; Cai, G.; Xin, J.; Li, G.; Sun, J.; Liao, F.; Lin, J., Synthesis, Structure and Superconducting Properties of  $Ba_{1-x}La_{x/4}K_{3x/4}(Bi_{0.25}Pb_{0.75})O_{3-δ}$  Perovskites. *Physica C: Superconductivity and its Applications*, **2022**, 598, 1354075. (Category X)
13. Bilal, B.; Niazi, R.; Nadeem, S.; **Farid, M. A.;** Nazir, M. S.; Akhter, T.; Javed, M.; Mohyuddin, A.; Rauf, A.; Ali, Z.; Naqvi, S. A. R.; Muhammad, N.; Elkaeed, E. B.; Ibrahim, H. A.; Awwad, N. S.; Hassan, S. U., Fabrication of Guided Tissue Regeneration Membrane Using Lignin-Mediated ZnO

- Nanoparticles in Biopolymer Matrix for Antimicrobial Activity. *Frontiers in Chemistry* **2022**, *10*, 837858. (Category W)
14. Kashif, M.; Fiaz, M.; Sajid, M. S.; Gul, F.; **Farid, M. A.**; Ashiq, M. N.; Najam-ul-Haq, M.; Athar, M., Functionalization of UiO-66-NH<sub>2</sub> by In-Situ Incorporation of Nanomaterials to Enhance Photocatalytic Efficiency Towards Oxygen Evolution Reaction. *Catalysis Letters* **2022**, *152*, 3202–3212. (Category X)
  15. **Farid, M. A.**; Ijaz, S.; Ashiq, M. N.; Gul, F.; Batool, S. R., Athar M.; Hassan, S. U., Synthesis of mesoporous zirconium manganese mixed metal oxide nanowires for photocatalytic reduction of CO<sub>2</sub>. *Journal of Materials Research* **2021**, *37*, 522–532. (Category W)
  16. Hassan, S. U.; **Farid, M. A.**; Wang, Y., A series of lanthanide–quinoxaline-2,3(1H,4H)-dione complexes containing 1D chiral Ln<sub>2</sub>O<sub>3</sub> (Ln = Eu, Tb, Sm, Dy) chains: luminescent properties and response to small molecules. *RSC Advances* **2021**, *11* (53), 33309-33318. (Category W)
  17. **Farid, M. A.**; Li, G.; Lin, J.; Firdous, A.; Hassan, S., Structural, Magnetic and Dielectric Properties of Perovskite (Tb<sub>0.874</sub>Mn<sub>0.106</sub>)Mn<sub>1-x</sub>Ni<sub>x</sub>O<sub>3-δ</sub>. *Electronic Materials Letters* **2021**, *17*, 229-239. (Category X)
  18. Athar M.; Fiaz, M. ; **Farid, M. A.**; Tahir, M.; Asghar, M.A.; Hassan, S.; Hassan, M., Iron and Manganese Co-doped Cobalt Tungstate Co<sub>1-(x+y)</sub>Fe<sub>x</sub>Mn<sub>y</sub>WO<sub>4</sub> as Efficient Photoelectrocatalysts for Oxygen Evolution Reaction. *ACS Omega* **2021**, *6* (11) 7334–7341. (Category W)
  19. **Farid, M. A.**; Zhang, F.; Zhang, M.; Zhang, H.; Firdous, A.; Li, G.; Liao, F.; Lin, J., Superconductivity for potassium doped BaPb<sub>0.80</sub>Bi<sub>0.20</sub>O<sub>3-δ</sub> and BaPb<sub>0.60</sub>Bi<sub>0.40</sub>O<sub>3-δ</sub> with zero electrical resistivity at ~ 11 K. *Journal of Alloys and Compounds* **2020**, *815*, 152460. (Category W)
  20. Fiaz, M. ; Athar M., Rani, S.; Najam-ul-Haq, M.; **Farid, M. A.**; One Pot Solvothermal Synthesis of Co<sub>3</sub>O<sub>4</sub>@UiO-66 and CuO@UiO-66 for Improved Current Density towards Hydrogen Evolution Reaction, *Materials Chemistry and Physics* **2020**, *239*, 122320. (Category W)
  21. Fiaz, M. ; Kashif, M.; Majeed, S.; Ashiq, M. N.; **Farid, M. A.**; Athar M., Facile Fabrication of Highly Efficient Photoelectrocatalysts M<sub>x</sub>O<sub>y</sub>@NH<sub>2</sub>-MIL-125(Ti) for Enhanced Hydrogen Evolution Reaction, *ChemistrySelect* **2019**, *4*, 6996-7002. (Category X)
  22. Hassan, S.; Nawaz, F.; Khan, Z. H.; Firdous, A.; **Farid, M. A.**; Nazir, M. S., Optical Materials: Studying the role of heteropolyacid to enhance the nonlinear optical responses of porphyrin in their hybrids system, *Optical Materials* **2018**, *86*, 106-112. (Category W)
  23. Gul, F.; Athar, M.; **Farid, M. A.**, Nanocomposites of Transition Metals Tungstate for Potential Applications in Magnetic and Microwave Devices. *Journal of Electroceramics* **2018**, *40*(4), 300-305. (Category X)

24. Ma, X.; **Farid, M. A.**; Li, J.; Yang, A.; Liao, F.; Li, G.; Liu, L.; Lin, J., Neutron Diffraction Study on the Magnetic Structure of  $^{153}\text{EuMnO}_{3-\delta}$ : One Way to Assess the Magnetic Structure of  $\text{EuMnO}_{3-\delta}$ . *Research and Application of Materials Science* **2020**, 2, 58-64. (Category Y)
25. **Farid, M. A.**; Zhang, H.; Yang, A.; Tian, G.; Wu, M.; Li, G.; Liao, F.; Lin, J., Response to “Does  $\text{BaTbO}_3$  Adopt the  $P1$  Symmetry?”. *European Journal of Inorganic Chemistry* **2018**, 2018 (48), 5267-5269. (Category W)
26. **Farid, M. A.**; Li, G. B.; Firdous, A.; Liu, X. Z.; Wang, C. W.; Hassan, S.; Wang, X.; Sun, J.; Liao, F. H.; Lin, J. H., Effect of Zinc Doping on Structural, Magnetic and Dielectric Properties of Perovskite  $(\text{Tb}_{0.874}\text{Mn}_{0.106})\text{MnO}_{3-\delta}$ . *Journal of Materials Science; Materials in Electronics* **2018**, 29 (19), 16543-16552. (Category X)
27. Firdous, A.; Wang, X.; **Farid, M. A.**; Zhang, M.; Wang, Y.; Geng, J.; Sun, J.; Li, G.; Liao, F.; Lin, J., Superconductivity in Perovskite  $\text{Ba}_{0.85-x}\text{La}_x\text{Pr}_{0.15}(\text{Bi}_{0.20}\text{Pb}_{0.80})\text{O}_{3-\delta}$ . *Journal of Superconductivity and Novel Magnetism* **2019**, 32, 167-173. (Category X)
28. Zhang, M.; **Farid, M. A.**; Wang, Y.; Xie, J.; Geng, J.; Zhang, H.; Sun, J.; Li, G. B.; Liao F. H.; Lin, J. H., Superconductivity in Perovskite  $\text{Ba}_{1-x}\text{Ln}_x(\text{Bi}_{0.20}\text{Pb}_{0.80})\text{O}_{3-\delta}$  ( $\text{Ln} = \text{La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu}$ ) *Inorganic Chemistry* **2018**, 57(3), 1269-1276. (Category W)
29. Abid, M.; Anwer, S.; Aslam, I.; **Farid, M. A.**; Strain engineering effect on surprising magnetic semiconducting behavior in zigzag arsenene nanoribbons. *Computational Materials Science*. **2017**, 139, 185-190. (Category W)
30. Deng, J.; **Farid, M. A.**; Yang, A.; Zhang, J.; Zhang, H.; Zhang, L.; Qiu, Y.; Yu, M.; Zhu, H.; Zhong, M.; Li, J.; Liu, L.; Sun, J.; Li, G. B.; Lin, J. H., The Origin of Multiple Magnetic and Dielectric Anomalies of Mn-doped  $\text{DyMnO}_3$  in Low Temperature Region. *Journal of Alloys and Compounds* **2017**, 725, 976-983. (Category W)
31. Deng, J.; **Farid, M. A.**; Meng, Z.; Yang, A.; Zhang, H.; Zhang, H.; Tian, G.; Wu, M.; Liu, L.; Sun, J.; Li, G.; Liao, F.; Lin, J., Enhancement of Ferroelectricity for Orthorhombic  $(\text{Tb}_{0.861}\text{Mn}_{0.121})\text{MnO}_{3-\delta}$  by Copper Doping. *Inorganic Chemistry* **2017**, 56, 3475-3482. (Category W)
32. **Farid, M. A.**; Zhang, H.; Yang, A.; Tian, G.; Wu, M.; Li, G.; Liao, F.; Lin, J., Facile Synthesis, Structure Elucidation and Magnetic Properties of Perovskite  $\text{BaTb}_{1-x}\text{Bi}_x\text{O}_3$ . *European Journal of Inorganic Chemistry* **2017**, 2017 (11), 1427-1434. (Category W)
33. Deng, J.; Yang, A.; **Farid, M. A.**; Zhang, H.; Li, J.; Zhang, H.; Li, G.; Liu, L.; Sun, J.; Lin, J., Synthesis, Structure and Magnetic properties of  $(\text{Eu}_{1-x}\text{Mn}_x)\text{MnO}_{3-\delta}$ . *RSC Advances* **2017**, 7 (4), 2019-2024. (Category W)

34. Meng, Z.; Farid, M. A.; Zhang, H.; Li, G.; Sun, J.; Liao, F.; Lin, J., Superconductivity of Perovskite  $Ba_{1-x}Y_x(Bi_{0.2}Pb_{0.8})O_{3-\delta}$ . *Journal of Superconductivity and Novel Magnetism* **2017**, 30 (7), 1705-1712. (Category X)
35. Farid, M. A.; Yasir Rafique, M.; Irfan, M.; Hassan, S.; Firdous, A.; Hasan, M., Structural, Electrical and Dielectric Properties of Pyrochlore  $LaCrZr_{2-x}Ge_xO_7$  Nanospheres. *Journal of Nanoscience and Nanotechnology*. **2017**, 17 (8), 5740-5744. (Category X)
36. Hassan, S.; Hasan, M.; Firdous, A.; Farid, M. A.; Preparation, Characterization and *In Vitro* Biological Evaluation of Nano-tubular Polyoxometalate. *Journal of Nanoscience and Nanotechnology*. **2017**, 17 (7), 4882-4887. (Category X)
37. Yang, A. M.; Sheng, Y. H.; Farid, M. A.; Zhang, H.; Lin, X. H.; Li, G. B.; Liu, L. J.; Liao, F. H.; Lin, J. H., Copper doped  $EuMnO_3$ : synthesis, structure and magnetic properties. *RSC Advances* **2016**, 6 (17), 13928-13933. (Category W)
38. Yasir Rafique, M.; Pan, L.; Farid, M. A., From nano-dendrite to nano-sphere of  $Co_{100-x}Ni_x$  alloy: Composition dependent morphology, structure and magnetic properties. *Journal of Alloys and Compounds* **2016**, 656, 443-451. (Category W)
39. Farid, M. A.; Zhang, H.; Lin, X.; Yang, A.; Yang, S.; Li, G.; Liao, F.; Lin, J., Structural and magnetic properties of tetragonal perovskite  $BaFe_{1-x}Bi_xO_{3-\delta}$ . *RSC Advances* **2015**, 5 (17), 12866-12871. (Category W)
40. Farid, M. A.; Asghar, M. A.; Ashiq, M. N.; Ehsan, M. F.; Athar, M., Hydrothermal synthesis of doped lanthanum zirconate nanomaterials and the effect of V-Ge substitution on their structural, electrical and dielectric properties. *Materials Research Bulletin* **2014**, 59 (0), 405-410. (Category W)
41. Jamil, M.; Zubair, M.; Farid, M. A.; Altaf, A. A.; Rasool, N.; Nasim, F.-U.-H.; Ashraf, M.; Rashid, M. A.; Ejaz, S. A.; Yaqoob, A., Study of Antioxidant, Cytotoxic, and Enzyme Inhibition Activities of Some Symmetrical  $N^3,N^{3'}$ -Bis(disubstituted)isophthalyl-bis(thioureas) and  $N^3,N^3,N^{3'},N^{3'}$ -Tetrakis(disubstituted)isophthalyl-bis(thiourea) and Their Cu(II) and Ni(II) Complexes. *Journal of the Chemical Society of Pakistan* **2014**, 36 (3) 491-497. (Category X)
42. Jamil, M.; Zubair, M.; Farid, M. A.; Altaf, A. A.; Rasool, N.; Bukhari, I. H.; Rizwan, K.; Ahmad, V. U., Synthesis, Characterization and Antibacterial Activity of Some Novel Symmetrical  $N^3, N^{3'}$ -Bis (disubstituted) isophthalyl-bis (thioureas) and Their Cu (II) and Ni (II) Complexes. *Journal of the Chemical Society of Pakistan* **2013**, 35 (3), 834-839. (Category X)
43. Jamil, M.; Zubair, M.; Farid, M. A.; Rashid, U.; Rasool, N.; Islam, S., Antibacterial, Cytotoxic Studies and Characterization of Some Newly Synthesized Symmetrical,-Bis (disubstituted) isophthalyl-bis (thioureas) and Their Cu (II) and Ni (II) Complexes. *Journal of Chemistry* **2013**, 2013. (Category X)

44. Jamil, M.; Zubair, M.; Altaf, A. A.; **Farid, M. A.**; Hussain, M. T.; Rasool, N.; Bukhari, I. H.; Ahmad, V. U., Synthesis, Characterization and Antibacterial Activity of Some Novel Symmetrical N<sup>3</sup>, N<sup>3'</sup>-Bis (disubstituted) isophthalyl-bis (thioureas) and N<sup>3</sup>, N<sup>3</sup>, N<sup>3'</sup>, N<sup>3'</sup>-Tetrakis (disubstituted) isophthalyl-bis (thiourea) and Their Cu (II) and Ni (II) Complexes. *Journal of the Chemical Society of Pakistan* **2013**, 35 (3), 737-743. (Category X)

### **CONFERENCES/SEMINARS:**

1. Participated as Oral Presentation “Tuning the Band Gap of Nanocomposites through Green Synthesis for Photocatalytic Applications” in 4th International Conference on Physical Sciences and Engineering (ICPSE-2024) held on February 14-16, 2024 at Khwaja Fareed University of Engineering and Information Technology Rahim Yar Khan, Pakistan.
2. Participated as Oral Presentation “Hole Doped to Electron Doped Superconductors: Synthesis, Characterization and Challenges” in 1st International Conference on Trends and Research in Chemistry (TRIC-202) held on January 18-19, 2022 at Department of Chemistry Division of Science and Technology University of Education Lahore, Pakistan.
3. Participated as National Invited Speaker “Superconductors in Magnetic Resonance Imaging: Synthesis, Characterization and Challenges” in 1<sup>st</sup> international conference on Emerging trends in interdisciplinary research in biomedical sciences (ETIRBS-2020), held on 10-11 December 2020 in University of Okara. Pakistan.
4. Participated as Oral Presentation “High Temperature Superconductors: Compositional Perspective” in International Conference Frontiers of Chemistry held on March 27-29, 2019 at Institute of Chemical Sciences Bahauddin Zakariya University, Multan, Pakistan.
5. Participated as Invited Speaker “Development of High Temperature Superconductors for Energy Applications” in International Conference on Recent Advances in Materials Science and Photocatalysis held on October 28-30, 2018 at University of Lahore, Lahore Pakistan.
6. Presented a paper on “Structural and Magnetic Properties of Tetragonal Perovskites” in 7th National Conference on Phase Diagram and the International Symposium on the Design of Materials held on November 3-7, 2015 at Guilin University of Electronic Technology, Guilin, P. R. China.
7. Presented a paper on “Hydrothermal Synthesis of Inorganic Organic Hybrid Materials” in 11<sup>th</sup> International and 23<sup>rd</sup> National Chemistry conference held on October 15-17, 2012 at National Centre of Excellence in Physical Chemistry at University of Peshawar, Pakistan.
8. 10<sup>th</sup> International and 22<sup>nd</sup> National Chemistry Conference held on November 21-23, 2011 at University of Agriculture, Pakistan.
9. Organized a workshop on Curriculum vitae writing on March 21, 2019 at University of Education Lahore, Vehari Campus.

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10. Organized a Symposium on “Pure and Applied Chemistry” held on April 17, 2019 at University of Education Lahore, Vehari Campus.
11. Organized a seminar on Mesoporous Nanostructures for Adsorption of Poisonous Metals from Aqueous Solution February 24, 2021 at University of Education Lahore, Vehari Campus.
12. Organized a seminar on Use of Radiation in Medical Sciences held on April 07, 2021 at University of Education Lahore, Vehari Campus.
13. Organized a seminar on “COVID-19 and Public Health: Let's Flatten the Curve together" supported by the US Mission in Pakistan in collaboration with the Pakistan-U.S. Alumni Network” held on May 25, 2021 at University of Education Lahore, Vehari Campus.
14. Organized a seminar on “Seminar on Synthetic and Applied Chemistry” held on June 23, 2022 at University of Education Lahore, Vehari Campus.
15. Organized a seminar on “2D Phosphorus Based Materials for Energy Conversion and Storage” held on March 14, 2024 Department of Chemistry University of Education Lahore, Vehari Campus.
16. Organized a seminar on “Non-solvated Synthesis and Applications of Polymetallic Materials” held on February 15, 2024 Department of Chemistry University of Education Lahore, Vehari Campus

#### **AWARDS & ACHIEVEMENTS:**

- Awarded by International Centre for Diffraction Data (ICDD) in recognition of the significant contribution of 9 patterns to the “Powder Diffraction File – Release 2025.
- Awarded Gold Medal for PhD in Annual Meeting of Zakariyan Chemist Organization (ZACHO), Organized by Institute of Chemical Sciences, Bahauddin Zakariya University, Multan, Pakistan on March 27, 2019.
- 2016 Outstanding International Student’s Scholarship Award Winner at Peking University China.
- Received Appreciation certificate from French Ambassador on Explaining the Latest Chemistry Models in 2010.

#### **ADMINISTRATIVE EXPERIENCE:**

- **Coordinator Sports:** University of Education Lahore, Vehari Campus, Vehari 61100, Pakistan.  
**December 07, 2019 – Present.**
- **Internal Controller Examinations:** University of Education Lahore, Vehari Campus, Vehari 61100, Pakistan.  
**December 07, 2019 – Present.**

#### **RESEARCH GRANTS:**

- Achieved 0.44 Million (PKR) as Principal Investigator for Startup Research Grant Project Entitled as “Synthesis of Pb-based Transition metal based Superconductors and Exploration of their Structural

and Magnetic properties” from Higher Education Commission, Pakistan, Project No. 1916. (2018-2019).

### **RESEARCH PROJECTS SUBMITTED:**

- Submitted Research Grant Project Entitled as “Fabrication of New Multifunctional Perovskite Oxides for Energy Applications” to Competitive Research Programme of Pakistan Science Foundation with Estimated Cost of the Project: 6.78 Million.

### **COLLABORATORS:**

- **Dr. Li Guobao (Associate Professor of Inorganic Chemistry)**

Beijing National Laboratory for Molecular Sciences, State Key Laboratory of Rare Earth Materials Chemistry and Applications, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, P. R. China.

Email:

#### **Yingxia Wang (Professor of Inorganic Chemistry)**

Beijing National Laboratory for Molecular Sciences, State Key Laboratory of Rare Earth Materials Chemistry and Applications, College of Chemistry and Molecular Engineering, Peking University, Beijing 100871, P. R. China.

Email: yxwang@pku.edu.cn