Raja Shahid Ashraf

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PROFILE

With over a decade of experience in research, I have consistently excelled in the development, synthesis, and analysis of conjugated materials dedicated to the advancement of energy conversion and storage technologies. Collaboratively working with esteemed academic and industrial partners, I have actively pursued the practical application of my research, thereby contributing significantly to the betterment of society.

My professional journey has been enriched by remarkable positions at renowned institutions such as Friedrich-Schiller-University Jena, Germany, Technical University Eindhoven (TU/e) The Netherlands, Imperial College London, UK and KAUST in Saudi Arabia. Currently, I hold the esteemed role of Research Coordinator at the Department of Chemistry within Government College University (GCU) Lahore, while also serving as Professor.

I am humbled to be acknowledged as a Member of the Royal Society of Chemistry, in recognition of my remarkable accomplishments as a researcher in my field. Through my extensive research, I have published over 80 peer-reviewed scientific articles, garnering over 12,000 citations and an impressive h-index of 50, solidifying my position as a leading authority in my field. (**Google Scholar**)

CURRENT EMPLOYMENT

PROFESSOR [2023 – to date]
Department of Chemistry, Government College University Lahore – Pakistan

- Teaching, training, and course development of BS, MS, MPhil, and Ph.D. students
- Supervision and guidance of MS/MPhil and Ph.D. research students
- Managing grants and research fundings and creating cross-institutional collaboration opportunities

PREVIOUS EMPLOYMENT

ASSOCIATE PROFESSOR [2018 – 2023]
Department of Chemistry, Government College University Lahore – Pakistan

- Teaching, training, and course development of BS, MS, MPhil, and Ph.D. students
- Supervision and guidance of MS/MPhil and Ph.D. research students

RESEARCH SCIENTIST [2016 – 2018]
King Abdullah University of Science and Technology – Saudi Arabia

- Device fabrication team leader
- Development of new device design, architecture/combinations of organic and organic/inorganic hybrid materials for organic solar cells and field-effect transistors.
- Supervision and guidance of masters and Ph.D. students

RESEARCH ASSOCIATE (Device Fabrication Specialist) [2009 – 2016]
Imperial College London – United Kingdom

- Design, synthesis, and characterization of conjugated polymers for organic electronics
- Device fabrication (Organic solar cells and field-effect transistors) team leader
- Day-to-day supervision and training of master and Ph.D. students
- Laboratory Management and safety training

POST-DOCTORAL FELLOW [2006 – 2009]
Eindhoven University of Technology – The Netherlands

- Design and synthesis of hyperbranched conjugated polymers and dendrimers
- Device fabrication (Organic solar cells)

POST-DOCTORAL FELLOW [2005 – 2006]
Friedrich-Schiller-University – Jena, Germany

- Design, synthesis, and characterization of conjugated polymers for organic electronics

EDUCATION

Ph.D. Macromolecular and Organic Chemistry **[2002 – 2005]**
Friedrich Schiller University Jena – Jena, Germany

Dissertation Title: Band Gap Engineering of Donor-Acceptor π – Conjugated Poly(heteroarylene)s and Poly(heteroaryleneethynylene)s Note: (Magna cum laude)

M.Phil. Organic Chemistry **[1999 – 2001]**
Quaid-i-Azam University Islamabad – Islamabad, Pakistan

Dissertation Title: Synthesis, Characterization and Metal Uptake Studies of Chelating Polymers having Bidentate Pendent Groups

ACADEMIC AND PROFESSIONAL ROLES AND ASSOCIATION

RESEARCH COORDINATOR

- Providing support and guidance to students in developing research proposals and projects.
- Identifying and promoting funding opportunities for research projects and proposals.
- Monitoring and evaluating the progress of research projects and providing feedback to researchers.

MEMBERSHIP

- Member of Royal Society of Chemistry (MRSC) since 2012

EXAMINER

- Evaluated PhD thesis and conducted viva as external examiner at Institute of Chemical Sciences, Bahauddin Zakariya University **(BZU), Multan**; Syed Babar Ali School of Science and Engineering, **LUMS** and Department of Chemistry, University of Engineering and Technology **(UET), Lahore**; School of Chemical and Material Engineering (SCME), **NUST, Islamabad**
- Evaluated M.Phil. thesis and conducted viva as external examiner at Institute of Chemical Sciences, Bahauddin Zakariya University, Multan; **HEJ Research Institute of Chemistry, Karachi** and Institute of Chemistry, **University of Sargodha, Sargodha**; School of Chemistry, University of the Punjab **(PU) Lahore**

MEMBER OF BOARD OF STUDIES

- Member of Board of Studies at the Department of Applied Chemistry, Government College University (2020-2023)
- Faisalabad and Department of Chemistry, University of Engineering and Technology, Lahore (2020-2023)

STUDENTS SUPERVISED

- 1 post-doctorate
- 1 PhD student
- 4 PhDs students enrolled (two in thesis writing)
- 30+ M.Phil. students.
- 30+ MSc. and BS students.

TECHNICAL PROFICIENCY

Project Management | Organic synthesis | Purification techniques | Multi-nuclear NMR spectroscopy | Mass spectrometry | Microwave reactors | Schlenk and glove-box techniques | Gas chromatography | Fluorescence and UV-Vis spectroscopy | Differential scanning calorimetry | Gaussian software (DFT calculations) | CIEH Level 3 Award (Health and Safety in the Workplace)

REVIEWER OF INDEXED SCIENTIFIC JOURNALS

Advanced Energy Materials | Advanced Functional Materials | Advanced Optical Materials | Organic Electronics

RESEARCH FUNDING

	Title of the Project	Funding Agency & Duration	Amount (PKR)	Duration
1.	Organic and inorganic hybrid Materials for Energy Conversion and Storage **(PI)**	HEC-World Bank	26.8 M	2021-2023

2.	Functional Materials for Emerging Photovoltaic Applications **(PI)**	HEC	7.1 M	2022-2025
3.	Fused (hetero)ArylPyrazines for Potential Applications in Material and Biological Sciences **(Co-PI)**	HEC	14.9 M	2022-2024
4.	Covalent Conjugates of P3HT and Non-Fullerene Acceptors: Towards Improved Photovoltaic Devices and Accelerated Artificial Photosynthesis **(Co-PI)**	HEC	12.7 M	2022-2025
5.	Non-Fullerene Acceptors for Efficient Organic Photovoltaics (**PI**)	ORIC, GCU	0.3 M	2018-2019

RESEARCH COLLABORATIONS

ACADEMIC:

Queen Mary University of London, UK; **Wuhan University**, China; **KAUST**, Saudi Arabia; Lahore University of Management Sciences (**LUMS**) (Conjugated Polymers/ Organic Solar Cells)
Northumbria University, Newcastle upon Tyne, UK; National University of Science and Technology (**NUST**); **IRCBM**, COMSATS Lahore (Photocatalysis/ Electrocatalysis)

INDUSTRIAL:

Printex (Development of Natural Dyes based Inks for use in Textile Industry)

INVITED ORAL TALKS

1. Organic Molecular Chemistry for Organic Photovoltaics and Bio Medical Applications, Northumbria University, Newcastle Upon Tyne, United Kingdom (August 8, 2024)
2. 2nd International Conference on Polymers and Composites (ICPC 22) at National Textile University, Faisalabad, Pakistan (December 6-7, 2022)
3. Resource Person at Workshop on “Organic and Inorganic Hybrid Materials for Energy Conversion and Storage” Department of Chemistry, School of Natural Sciences, NUST, Islamabad, Pakistan (August 25, 2022)
4. International Conference on Applied Chemistry (ICAC-2021) at Government College University Faisalabad, Pakistan (December 1, 2021)
5. 2nd International Symposium on Advanced Energy Material: Production to Storage (ISAEM 2019) at COMSATS Lahore campus, Pakistan (December 10, 2019)
6. International Conference on Nanoscience & Nanotechnology (ICONN-2019) (November 1-2, 2019)
7. Ruperto-Carola Symposium on Organic Electronics, Germany (May, 18, 2014)

INTERNATIONAL SYMPOSIUMS/ SEMINAR ORGANIZED

1. International Seminar on Hybrid Materials for Energy Conversion and Storage (February 21, 2023), GCU Lahore
2. International Symposium on Hybrid Materials for Energy Conversion and Storage (February 16, 2023) Bukhari Auditorium, GCU Lahore
3. Organic and Inorganic Hybrid Materials for Energy Conversion and Storage (August 25, 2022), National University of Science and Technology (NUST), Islamabad-Pakistan
4. 1st International Symposium on Circular Economy for Sustainability in Energy and Textile Sector (May 24, 2022) Bukhari Auditorium, GCU Lahore

TRAININGS

1. Research Capacity Building Programme for Principal Investigators (February 4, 2022) - British Council - Higher Education Commission, Islamabad
2. Faculty Professional Development Programme (April 14, 2019) - Government College University Lahore

3. Project Management, Consulting and Training (October 24-25, 2016) - King Abdullah University of Science and Technology (KAUST)
4. Level 3 Award in Health and Safety in the Workplace (February 11, 2015) - Chartered Institute of Environmental Health UK

EXPERT REVIEWER/ADVISOR FOR RESEARCH GRANTS

1. Expert review and evaluation of HEC research grants applications
2. Assessment and evaluation of PSF research project applications
3. Assessment and evaluation of HEC-funded post doctorate applications

PUBLICATIONS

Profiles: **Google Scholar | SCOPUS | ORCID**

1. Z. Abid, W. Akram, R. M.-Hernandez, D. Gunturkun, M. Shahid, M. Altaf, J. Min, J. I. Khan, J. Iqbal, S. Rasul, C. B. Nielsen, **R. S. Ashraf*** Strategic Design, Synthesis, and Computational Characterization of Hole Transport Materials for Lead-Free Perovskite Solar Cells, ***ACS Sustainable Chemistry & Engineering*** **2025** *13* (2), 867-880.

2. H. K. Zafar, S. S. A. Shah, M Sohail, R. S. Ashraf, A. Nafady, G. Will, M. A. Wahab. Optimizing electrochemical power generation: Harnessing synergies and surface innovation in NiTe-modified MOF nanoarchitectures. ***Journal of Power Sources***, **2024**, 612, 234827.

3. M. M. U Din, A. Batool, R. S. Ashraf, A. Yaqub, A. Rashid, N. M. U Din, Green Synthesis and Characterization of Biologically Synthesized and Antibiotic-Conjugated Silver Nanoparticles followed by Post-Synthesis Assessment for Antibacterial and Antioxidant Applications. ***ACS Omega***, **2024**, 9(17), 18909-18921.

4. Z. Abid, L. Ali, M. Shahid, C. B. Nielsen, M. Altaf, J. Min, **R. S. Ashraf***, Quantum modelling of multi-directional fused-ring electron acceptors for organic photovoltaics, ***Journal of Physics and Chemistry of Solids***, **2024**, 187,111837.

5. M. Chen, S. Wang, R. Sun, X. Yang, X. Wu, Y. Gao, B. Xiao, L. -Y. Xu, Y. Shao, B. Xiao, J. Wan, M. Zhang, R. Yang, **R. S. Ashraf**, J. Min, High-performance binary all-polymer solar cells enabled by a Y-derivative pendant random-copolymerized polymer acceptor with a broad donor–acceptor matching tolerance, ***Journal of Materials Chemistry A*** **2024**, 12 (13), 7754-7764.

6. X. Yang, Y. Gao, R. Sun, M. Chen, Y. Wang, S. S. Wang, Y. Shao, L.-Y. Xu, M. Zhang, Y. Fu, X. Lu, **R. S. Ashraf**, Y. N. Luponosov, S. A. Ponomarenko, J. Min, The Application of Y Series Acceptor-Based Double-Cable Polymers in Single-Material Organic Solar Cells ***Macromolecules*** **2024,** *57* (3), 1011-1020.

7. A. Hassan, H. K. Zafar, **R. S. Ashraf**, M. Arfan, R. Karim, M. A. Wahab, M. Sohail, Ferrocene-Boosted Nickel Sulfide Nanoarchitecture for Enhanced Alkaline Water Splitting, ***Chem. Asian J.*** **2024**, e202301051.

8. X. Yang, M. Chen, S. Wang, Y. Gao, Y. Shao, L. Xu, Y. Wu, Y. Wang, **R. S. Ashraf**, S. Ponomarenko, Y. Luponosov, J. Min, The application of chlorine substituted conjugated block copolymers in the single-component organic solar cells, ***Giant*****, 2023**, 16, 100191.

9. S. Iqbal, A. A. Khan, N. Z. Butt, **R. S. Ashraf**, B. Yameen, All organic double cable polymers of a polythiophene donor with rhodanine and perylene diimide acceptors and evaluation of photocurrent generation. ***Journal of Materials Chemistry C*** 2023, 11 (45), 16037-16048.

10. A. Munawar, H. Stoeckli-Evans, A. A. Isab, I. Rashid, **R. S. Ashraf** and M. Altaf. Synthesis, characterization, and in vitro antimicrobial studies of heteroleptic silver (I) polymers. ***Polyhedron*****, 2023,** 140, p.116447

11. S. Gulzar, Z. Abid, **R.S. Ashraf**, M. Sher, A. A. Isab, M. Altaf. Synthesis, characterization and in vitro cytotoxicity of Au (I) carbene complexes. ***Inorganic Chemistry Communications*****, 2023**, 148, p.110351

12. Z. Abid, L. Ali, S. Gulzar, F. Wahad, **R. S. Ashraf**, C. B. Nielsen, Quinoxaline derivatives as attractive electron-transporting materials, ***Beilstein Journal of Organic Chemistry*** **2023**, 19,1694-1712.

13. M. Bilal, A. Altaf, N. Baig, G. A. Chotana, **R. S. Ashraf**, S. Rasool, A. Nafady, A. Ul-Hamid, and M. Sohail. Crystalline and porous CoSe dendrimeric architectures for efficient oxygen evolution reaction. ***Fuel*****, 2022** 124324.

14. H. Baig, A. Rasool, S.Z. Hussain, J. Iqbal, **R.S. Ashraf**, A.H. Emwas, M. Alazmi, X. Gao, G.A. Chotana, and R.S.Z. Saleem. Synthesis, photophysical, electrochemical and computational studies of novel 2-aminoimidazolones with D-π-A framework. ***Journal of Photochemistry and Photobiology A: Chemistry*****, 2022** p.113918.

15. M. Khan, A. Hameed, A. Samad, T. Mushiana, M. I. Abdullah, A. Akhtar, **R.S. Ashraf**, N. Zhang, B. G. Pollet, U. Schwingenschlögl and M. Ma. In situ grown oxygen-vacancy-rich copper oxide nanosheets on a copper foam electrode afford the selective oxidation of alcohols to value-added chemicals. ***Communications Chemistry***, **2022**, 5 (1), p.109

16. S. Alsaggaf, **R. S. Ashraf**, B. Purushothaman, N. Chaturvedi, I. McCulloch, F. Laquai, and J. I. Khan, Efficiency Limits in Wide-Bandgap Ge-Containing Donor Polymer: Non-Fullerene Acceptor Bulk Heterojunction Solar Cells ***Physica status solidi (RRL)–Rapid Research Letters,*** **2021**.

17. I. Shafiq, M. Hussain, S. Shafique, P. Akhter, A. Ahmed, **R. S. Ashraf**, M. Ali Khan, B.H. Jeon, and Y.K. Park, Systematic Assessment of Visible-Light-Driven Microspherical V_2O_5 Photocatalyst for the Removal of Hazardous Organosulfur Compounds from Diesel ***Nanomaterials*****, 2021** *11*(11), 2908.

18. J. I. Khan, M. A. Alamoudi, N. Chaturvedi, **R. S. Ashraf**, M. N. Nabi, A. Markina, W. Liu et al., Impact of Acceptor Quadrupole Moment on Charge Generation and Recombination in Blends of IDT-Based Non-Fullerene Acceptors with PCE10 as Donor Polymer ***Advanced Energy Materials*****, 2021**, 2100839.

19. J. M. dos Santos, J. Marques, M. Neophytou, A. Wiles, C. T. Howells, **R. S. Ashraf**, I. McCulloch, and G. Cooke, Influence of alkyne spacers on the performance of thiophene-based donors in bulk-heterojunction organic photovoltaic cells ***Dyes and Pigments*** **2021**, 188, 109152.

20. D. Ohayon, A. Savva, W. Du, B. D. Paulsen, I. Uguz, **R. S. Ashraf**, J. Rivnay, I. McCulloch and S. Inal, Influence of Side Chains on the n-Type Organic Electrochemical Transistor Performance ***ACS Appl Mater Interfaces***, **2021**, 13, 4253-4266.

21. A. Mehmood, Z. Ur-Rehman, M. Altaf, **R. S. Ashraf**, M. Sohail and A. A. Isab, NiRu0.3Se Nanoparticles In Situ Grown on Reduced Graphene: Synthesis and Electrocatalytic Activity in the Oxygen Evolution Reaction ***ChemistrySelect***, **2021**, 6, 502-510.

22. S. Iftikhar, S. Aslam, N. Z. Butt, **R. S. Ashraf** and B. Yameen, Prato reaction derived polythiophene/C60 donor–acceptor double cable polymer, fabrication of photodetectors and evaluation of photocurrent generation ***Journal of Materials Chemistry C***, **2020**, 8, 17365-17373.

23. A. Wadsworth, H. Bristow, Z. Hamid, M. Babics, N. Gasparini, C. W. Boyle, W. Zhang, Y. Dong, K. J. Thorley, M. Neophytou, **R. S. Ashraf**, J. R. Durrant, D. Baran and I. McCulloch,End Group Tuning in Acceptor–Donor–Acceptor Nonfullerene Small Molecules for High Fill Factor Organic Solar Cells ***Advanced Functional Materials***, **2019**, 0, 1808429.

24. C.-H. Tan, A. Wadsworth, N. Gasparini, S. Wheeler, S. Holliday, **R. S. Ashraf**, S. D. Dimitrov, D. Baran, I. McCulloch and J. R. Durrant,Excitation Wavelength-Dependent Internal Quantum Efficiencies in a P3HT/Nonfullerene Acceptor Solar Cell ***The Journal of Physical Chemistry C***, **2019**, 123, 5826-5832.

25. J. I. Khan, **R. S. Ashraf**, M. A. Alamoudi, M. N. Nabi, H. N. Mohammed, A. Wadsworth, Y. Firdaus, W. Zhang, T. D. Anthopoulos, I. McCulloch and F. Laquai,P3HT Molecular Weight Determines the Performance of P3HT:O-IDTBR Solar Cells ***Solar RRL***, **2019**, 0, 1900023.

26. A. Wadsworth, Z. Hamid, M. Bidwell, **R. S. Ashraf**, J. I. Khan, D. H. Anjum, C. Cendra, J. Yan, E. Rezasoltani, A. A. Y. Guilbert, M. Azzouzi, N. Gasparini, J. H. Bannock, D. Baran, H. Wu, J. C. de Mello, C. J. Brabec, A. Salleo, J. Nelson, F. Laquai and I. McCulloch,Progress in Poly (3-Hexylthiophene) Organic Solar Cells and the Influence of Its Molecular Weight on Device Performance ***Advanced Energy Materials***, **2018**, 8, 1801001.

27. W. Du, D. Ohayon, C. Combe, L. Mottier, I. P. Maria, **R. S. Ashraf**, H. Fiumelli, S. Inal and I. McCulloch,Improving the Compatibility of Diketopyrrolopyrrole Semiconducting Polymers for Biological Interfacing by Lysine Attachment ***Chemistry of Materials***, **2018**, 30, 6164-6172.

28. A. Wadsworth, **R. S. Ashraf**, M. Abdelsamie, S. Pont, M. Little, M. Moser, Z. Hamid, M. Neophytou, W. Zhang, A. Amassian, J. R. Durrant, D. Baran and I. McCulloch,Highly Efficient and Reproducible Nonfullerene Solar Cells from Hydrocarbon Solvents ***ACS Energy Letters***, **2017**, 2, 1494-1500.

29. D. Baran, **R. S. Ashraf***, D. A. Hanifi, M. Abdelsamie, N. Gasparini, J. A. Röhr, S. Holliday, A. Wadsworth, S. Lockett, M. Neophytou, C. J. M. Emmott, J. Nelson, C. J. Brabec, A. Amassian, A. Salleo, T. Kirchartz, J. R.

Durrant and I. McCulloch,Reducing the efficiency-stability-cost gap of organic photovoltaics with highly efficient and stable small molecule acceptor ternary solar cells ***Nature Materials***, **2017**, 16, 363-369.

30. M. S. Vezie, S. Few, I. Meager, G. Pieridou, B. Dörling, **R. S. Ashraf**, A. R. Goñi, H. Bronstein, I. McCulloch, S. C. Hayes, M. Campoy-Quiles and J. Nelson,Exploring the origin of high optical absorption in conjugated polymers ***Nature Materials***, **2016**, 15, 746-753.

31. A. C. Knall, **R. S. Ashraf**, M. Nikolka, C. B. Nielsen, B. Purushothaman, A. Sadhanala, M. Hurhangee, K. Broch, D. J. Harkin, J. Novák, M. Neophytou, P. Hayoz, H. Sirringhaus and I. McCulloch,Naphthacenodithiophene Based Polymers—New Members of the Acenodithiophene Family Exhibiting High Mobility and Power Conversion Efficiency ***Advanced Functional Materials***, **2016**, 26, 6961-6969.

32. S. Holliday, **R. S. Ashraf**, A. Wadsworth, D. Baran, S. A. Yousaf, C. B. Nielsen, C. H. Tan, S. D. Dimitrov, Z. Shang, N. Gasparini, M. Alamoudi, F. Laquai, C. J. Brabec, A. Salleo, J. R. Durrant and I. McCulloch,High-efficiency and air-stable P3HT-based polymer solar cells with a new non-fullerene acceptor ***Nature Communications***, **2016**, 7

33. M. Held, Y. Zakharko, M. Wang, F. Jakubka, F. Gannott, J. W. Rumer, **R. S. Ashraf**, I. McCulloch and J. Zaumseil,Photo- and electroluminescence of ambipolar, high-mobility, donor-acceptor polymers ***Organic Electronics: physics, materials, applications***, **2016**, 32, 220-227.

34. K. J. Fallon, N. Wijeyasinghe, E. F. Manley, S. D. Dimitrov, S. A. Yousaf, **R. S. Ashraf**, W. Duffy, A. A. Y. Guilbert, D. M. E. Freeman, M. Al-Hashimi, J. Nelson, J. R. Durrant, L. X. Chen, I. McCulloch, T. J. Marks, T. M. Clarke, T. D. Anthopoulos and H. Bronstein,Indolo-naphthyridine-6,13-dione thiophene building block for conjugated polymer electronics: Molecular origin of ultrahigh n-type mobility ***Chemistry of Materials***, **2016**, 28, 8366-8378.

35. D. Baran, T. Kirchartz, S. Wheeler, S. Dimitrov, M. Abdelsamie, J. Gorman, **R. S. Ashraf**, S. Holliday, A. Wadsworth, N. Gasparini, P. Kaienburg, H. Yan, A. Amassian, C. J. Brabec, J. R. Durrant and I. McCulloch, Reduced voltage losses yield 10% efficient fullerene free organic solar cells with >1 V open circuit voltages ***Energy and Environmental Science***, **2016**, 9, 3783-3793.

36. W. Yue, **R. S. Ashraf**, C. B. Nielsen, E. Collado-Fregoso, M. R. Niazi, S. A. Yousaf, M. Kirkus, H. Y. Chen, A. Amassian, J. R. Durrant and I. McCulloch,A Thieno[3,2-b][1]benzothiophene Isoindigo Building Block for Additive- and Annealing-Free High-Performance Polymer Solar Cells ***Advanced Materials***, **2015**, 27, 4702-4707.

37. B. C. Schroeder, M. Kirkus, C. B. Nielsen, **R. S. Ashraf** and I. McCulloch, Dithienosilolothiophene: A New Polyfused Donor for Organic Electronics ***Macromolecules***, **2015**, 48, 5557-5562.

38. J. W. Rumer, **R. S. Ashraf**, N. D. Eisenmenger, Z. Huang, I. Meager, C. B. Nielsen, B. C. Schroeder, M. L. Chabinyc and I. McCulloch, Dual function additives: A small molecule crosslinker for enhanced efficiency and stability in organic solar cells ***Advanced Energy Materials***, **2015**, 5

39. C. B. Nielsen, **R. S. Ashraf***, N. D. Treat, B. C. Schroeder, J. E. Donaghey, A. J. P. White, N. Stingelin and I. McCulloch, 2,1,3-benzothiadiazole-5,6-dicarboxylic imide - A versatile building block for additive- and annealing-free processing of organic solar cells with effi ciencies exceeding 8% ***Advanced Materials***, **2015**, 27, 948-953.

40. Z. Li, K. Ho Chiu, **R. Shahid Ashraf**, S. Fearn, R. Dattani, H. Cheng Wong, C. H. Tan, J. Wu, J. T. Cabral and J. R. Durrant, Toward Improved Lifetimes of Organic Solar Cells under Thermal Stress: Substrate-Dependent Morphological Stability of PCDTBT:PCBM Films and Devices ***Scientific Reports***, **2015**, 5

41. S. Holliday, **R. S. Ashraf**, C. B. Nielsen, M. Kirkus, J. A. Röhr, C. H. Tan, E. Collado-Fregoso, A. C. Knall, J. R. Durrant, J. Nelson and I. McCulloch, A rhodanine flanked nonfullerene acceptor for solution-processed organic photovoltaics ***Journal of the American Chemical Society***, **2015**, 137, 898-904.

42. Z. Fei, **R. S. Ashraf**, Y. Han, S. Wang, C. P. Yau, P. S. Tuladhar, T. D. Anthopoulos, M. L. Chabinyc and M. Heeney,Diselenogermole as a novel donor monomer for low band gap polymers ***Journal of Materials Chemistry A***, **2015**, 3, 1986-1994.

43. K. J. Fallon, N. Wijeyasinghe, N. Yaacobi-Gross, **R. S. Ashraf**, D. M. E. Freeman, R. G. Palgrave, M. Al-Hashimi, T. J. Marks, I. McCulloch, T. D. Anthopoulos and H. Bronstein,A Nature-Inspired Conjugated Polymer for High Performance Transistors and Solar Cells ***Macromolecules***, **2015**, 48, 5148-5154.

44. E. Collado-Fregoso, P. Boufflet, Z. Fei, E. Gann, **S. Ashraf**, Z. Li, C. R. McNeill, J. R. Durrant and M. Heeney,Increased Exciton Dipole Moment Translates into Charge-Transfer Excitons in Thiophene-Fluorinated Low-Bandgap Polymers for Organic Photovoltaic Applications ***Chemistry of Materials***, **2015**, 27, 7934-7944.

45. **R. S. Ashraf***, I. Meager, M. Nikolka, M. Kirkus, M. Planells, B. C. Schroeder, S. Holliday, M. Hurhangee, C. B. Nielsen, H. Sirringhaus and I. McCulloch, Chalcogenophene comonomer comparison in small band gap diketopyrrolopyrrole-based conjugated polymers for high-performing field-effect transistors and organic solar cells ***Journal of the American Chemical Society***, **2015**, 137, 1314-1321.

46. R. E. Andernach, S. Rossbauer, **R. S. Ashraf**, H. Faber, T. D. Anthopoulos, I. McCulloch, M. Heeney and H. A. Bronstein, Conjugated polymer-porphyrin complexes for organic electronics ***ChemPhysChem***, **2015**, 16, 1223-1230.

47. C. P. Yau, Z. Fei, **R. S. Ashraf**, M. Shahid, S. E. Watkins, P. Pattanasattayavong, T. D. Anthopoulos, V. G. Gregoriou, C. L. Chochos and M. Heeney, Influence of the electron deficient co-monomer on the optoelectronic properties and photovoltaic performance of dithienogermole-based co-polymers ***Advanced Functional Materials***, **2014**, 24, 678-687.

48. Y. W. Soon, S. Shoaee, **R. S. Ashraf**, H. Bronstein, B. C. Schroeder, W. Zhang, Z. Fei, M. Heeney, I. McCulloch and J. R. Durrant, Material crystallinity as a determinant of triplet dynamics and oxygen quenching in donor polymers for organic photovoltaic devices ***Advanced Functional Materials***, **2014**, 24, 1474-1482.

49. B. C. Schroeder, Z. Li, M. A. Brady, G. C. Faria, **R. S. Ashraf**, C. J. Takacs, J. S. Cowart, D. T. Duong, K. H. Chiu, C. H. Tan, J. T. Cabral, A. Salleo, M. L. Chabinyc, J. R. Durrant and I. McCulloch, Enhancing Fullerene-Based Solar Cell Lifetimes by Addition of a Fullerene Dumbbell ***Angewandte Chemie - International Edition***, **2014**, 53, 12870-12875.

50. J. W. Rumer, B. C. Schroeder, C. B. Nielsen, **R. S. Ashraf**, D. Beatrup, H. Bronstein, S. J. Cryer, J. E. Donaghey, S. Holliday, M. Hurhangee, D. I. James, S. Lim, I. Meager, W. Zhang and I. McCulloch, Bis-lactam-based donor polymers for organic solar cells: Evolution by design ***Thin Solid Films***, **2014**, 560, 82-85.

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1. Z. Abid, H. Naeem, F. Wahad, S. Gulzar, T. Shahzad, M. Shahid, M. Altaf and **R.S. Ashraf**, (2023). **High-Density Solids as Hydrogen Storage Materials.** In Advanced Functional Materials for Hydrogen Production, Conversion and Storage. 681-705, John Wiley & Sons, Inc.

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Book Edited:

Photoelectrochemical Bioanalysis: Fundamentals and Emerging Applications (1st Edition August 23, 2023) - Editors: Muhammad Altaf, **Raja Shahid Ashraf** & Manzar Sohail, ISBN: 9780443189555 – Published by Elsevier

Patents:

1. Process for Preparing Thieno[3,4-*b*] Pyrazine Copolymers, Thieno[3,4-*b*]- Pyrazine Copolymers Prepared by this Process, and their use. Publication number: **US 20090227763 A1**
   > **Inventors:** Steffi Sensfuss, Maher Al Ibrahim, Lars Blankenburg, Elisabeth Klemm, **Raja Shahid Ashraf**, Munazza Shahid.
2. Organic Ternary Blends. Patent number: **WO 2017191466 A1**
   > **Inventors:** Andrew Wadsworth, Christian Nielsen, Sarah Holliday, Ian McCulloch, Derya Baran, **Shahid Ashraf**.
3. Dimeric carbon materials and their use in organic photovoltaic devices. Patent number: **WO 2016000828 A3**
   > **Inventors:** Bob Schroeder, Iain Mcculloch, James Durant, Li Zhe, Shahid Ashraf, Marie-Béatrice Madec.