Part A. PERSONAL INFORMATION

CV date	25/12/2025

First name	Shahzada		
Family name	Ahmad		
Gender (*)	Male	Age	45
Social Security, Passport, ID number			
e-mail	shahzada.ahmad@qi.ub.edu	IQTC	
Open Researcher and Contributor ID (ORCID) (*)		0000-0002-1218-2556	

(*) Mandatory

A.1. Current position

Position	ICREA Professor		
Initial date	01-01-2026		
Institution	University of Barcelona		
Department/Center	IQTC, Dept. of Inorganic Chemistry		
Country	Spain	Telephone number	+3493402 1265
Key words	Photochemistry, electrochemistry, electron-transfer reaction, scanning probe microscopy, organic semiconductors, thin-film solar cells, energy storage, energy harvester, synapse		

A.2. Previous positions (research activity interuptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
2017-2025	Ikerbasque Prof., BCMaterials/EHU, Spain
2012-2017	Principal Scientist/Program Director, Abengoa Research, Spain
2008-2011	Humboldt Fellow, Max Planck Institute for Polymer, Germany

A.3. Education

Ph.D., Licensed, Graduate	University/Country	Year
Ph.D	National Physical Laboratory / Jamia Millia Islamia, New Delhi, India.	2006
Master in Materials Chemistry	Jamia Millia Islamia, New Delhi, India.	2002

Part B. CV SUMMARY *(max. 5000 characters, including spaces)*

Scientific Publications: **3 Books**, 8 book chapters, and 190+ peer-reviewed articles in top-tier journals in the field of Energy, Materials Science, and Chemistry as a leader and senior author. Including Nature Energy, Nature Commun., Joule, EES, JACS, Angewandte Chemie, CRPS, Advanced X Series (Energy Materials, Science, Interface, Functional Materials, 15 JMC, 8 PCCP, Nano Energy, Nano letters, ChemSusChem, Solar RRL, Nanoscale). Twelve of them have appeared on the front or back cover of journals, and are inventors of 7 families of Patents. **h-index = 65 with 16350+ Citations** link to Google Scholar. Over 20 popular science articles, including the blog "The Energy of Change" and in the Agenda of the World Economic Forum, for the public at large, and mapping ignorance.

Shahzada Ahmad is an ICREA professor at the University of Barcelona. His scientific interests include materials for energy applications. He obtained his Ph.D. degree in materials science and moved to the Max Planck Institute for Polymer Research to work on surfaces and interfaces using scanning probe microscopy. At EPFL, he developed nanoporous films for metal-free electro-catalysis and new redox shuttles. From 2012 – 2017, he was program

director at Abengoa Research, a corporate research center, and was a leader of disruptive projects and also acted as an interface between the business group and the technological development path. His scientific publications list reflects his interest in the domains of physical chemistry and materials science, with a research mission to develop innovative materials for energy. He is the inventor of 7 families of patent applications (23 patents), edited 3 books and 10 book chapters, and his work has been summarized in 190+ articles, including Nature and Cell family journals, along with popular science articles on the leading international platform. A recent ranking issued by Stanford University places him in the top <1% list of authors on a list of 100,000 top scientists across all fields, and Research.com listed him as a leader in Materials Science (Spain). His work has led to the invitation to speak at many scientific or policy-based conferences, inventor of patents, Chief Editor "Emergent Materials (Springer)", Associate Editor, "Chemistry of Inorganic Materials (Elsevier)" and "Chemistry Africa (Springer)", editorial board member of six scientific journals (*ChemPlusChem, Scientific Reports, Energy Materials, S N Applied Science, Frontiers of Optoelectronics and Frontiers in Energy Research*) and guest editor of several issues. He is a European Research Council Consolidator Grant (2016) awardee, elected member (fellow) of the European Academy of Sciences, a fellow of the Young Academy of Europe (Academia Europa), a fellow of the Royal Society of Chemistry (FRSC), a cohort of distinguished scientist by World Economic Forum, Young Investigator Medal (2019) Royal Academy of Engineering, Spain, Leonardo Fellowship (2023), Humboldt (2008) and Lindau (2006) fellowship. He is an evaluator of the national funding scheme of various countries and EU projects, a Jury member of prestigious awards, on the professor hiring and promotion committee of universities in different countries, the European Innovation Council, and was a technical chair of the largest renewable energy conference in Africa and the MENA region. His research mission is to develop materials and methodologies for energy generation, storage, and conservation applications. He is a strong advocate for renewable energy and regularly writes popular science articles for the public at large for leading platforms. He was invited to speak on energy materials and disruptive batteries at the World Economic Forum.

Ph.D Thesis Supervised in the last 5 years
1. Meenakshi Pegu (2018-2022)
2. David Payno (2018-2022)
3. Naveen Harindu (2019-2023)
4. M. Haris (2019-2023)
5. James Martin (2021-2026)
6. M. Gassara (2022-2026)

Part C. RELEVANT MERITS *(sorted by typology)*

C.1. Publications

1. **Scientific paper.** M. Gassara, J. Huang, D. Das, S. Kazim, M. Wang, S. Ahmad, Environmental Benign Cl-Terminated MXene For Buried Interface Engineering in Perovskite Solar Modules, *Advanced Functional Materials*, 2025, 2403248.
2. **Scientific paper.** M. Gassara, A. Li, A. Kulkarni, M. Wang, S. Kazim, S. Ahmad, Powder Methodology-An Effective Way to Suppress Sn^{2+} Oxidation in Narrow Bandgap Pb-Sn Perovskite, *Small Methods*, 2025, 2500522.
3. **Scientific paper.** S. Kazim, J. Huang, M. P.U. Haris, X. Li, X. Shi, Z. Zhang, R. Berger, T. Buffeteau, D. M. Bassani, M. Wang, S. Ahmad, Uncovering the Nanoscopic Humidity Ingression in Multifunctional Addivated Halide Perovskites, *Advanced Energy Materials*, 2025, 2403248.
4. **Scientific paper**. M. Gassara, J. G. -Garcés, L. Lezama, J. Ortiz, F. F.-Lazaro, S. Kazim, A. S.-Santos, S. Ahmad, Dopant-free Tert-butyl Zn (II) Phthalocyanines: Impact of Substitution on Photo-Physical Properties in Their Role in Perovskite Solar Cells, *J. Mater. Chem. C*, 2025, 13, 1704 – 1712.
5. **Scientific paper**. M. Gasara, L. Ferrer, L. Lezama, D. Molina, J. Ortiz, S. Kazim, Á. Sastre-Santos, S. Ahmad, Design of Spiro-Substituted Phthalocyanine Hole-Selective Layers for Perovskite Solar Cells, *Solar RRL*, 2025, e70088.

6. **Scientific paper.** M. Gassara, S. Kazim, S. Ahmad, Multifaceted Design of Surface Passivator for Upgraded Charge Extraction in Perovskite Solar Cells, *Solar RRL*, 2024, 8, 2400438.
7. **Scientific paper.** M. P. U Haris, E. Ruiz, S. Kazim, S. Ahmad, Lead-sulfur interaction induced damp and water stability in pure formamidinium lead triiodide. *Cell Report Physical Science*, 2023, 4, 101516.
8. **Scientific paper.** N. H. Hemasiri, M. Ashraf, S. Kazim, R. Graf, R. Berger, N. Ullah, M. N. Tahir, S. Ahmad, Interface Tweaking of Perovskite Solar Cells with Carbon Nitride-based 2D Materials, *Nano Energy*, 2023, 109, 108326.
9. **Scientific paper.** M. P. U. Haris, J. Xia, S. Kazim, Z. Molenda, L. Hirsh, T. Buffeteau, D. M. Bassani, M. K. Nazeeruddin, S. Ahmad, Probing Proton diffusion in FAPI and CsFAPI and Their Solar cells Fabrication, *Cell Report Physical Science*, 2022, 4, 101304.
10. **Scientific paper.** M. P. U. Haris, Samrana Kazim, and S. Ahmad, Microstrain and Urbach energy relaxation in $FAPbI_3$ based solar cells through powder engineering and perfluoroalkyl phosphate ionic liquid additive, *ACS Appl. Mater. Interfaces,* 2022, 14, 24546–24556.

Books Editor

1. Perovskite Solar Cells, Materials, Process & Application (Wiley) 2021
2. Shape Memory Composites Based on Polymers and Metals for 4D Printing (Springer), 2022
3. Photoelectrochemical Engineering for Solar Harvesting (Elsevier), 2024

C.2. Congress (Invited/keynote/plenary in the last 5 years)

1. International Nanotechnology and Polymer Days (UNIPG 2025), Turkey 2025
2. International Conference on Advanced Functional Materials and Devices (AFMD), Plenary
3. NETPORE Summer School, 2024, Turkey
4. Advanced functional materials for next-generation thin film photovoltaic (AFMD), 2024
5. International Conference on. Porphyrins and Phthalocyanines (ICPP), USA, 2024
6. 23rd International Conference on Photochemical Conversion & Storage of Solar (IPS),2023
7. Solid State Chemistry, Tunisian Chemical Society, Dec. 2023
8. ISOS-13. Stability of Emerging Solar Cells, 2022, Denmark
9. KIKx, King Fahad University of Petroleum (KFUPM), May 2023
10. PV Summer School, DTU/SDU, Denmark. August 2022
11. 12th International Conference on Porphyrins and Phthalocyanines (ICPP), July 2022
12. Materials for Sustainable Development Conference, Barcelona, October 2022
13. Spanish PV Association, Lecture April 2022

C.3. Research projects (Last 5 years)

1. Powder methodology developed narrow bandgap Pb-Sn perovskites for solar cells fabrication (PHONON) Ministerio De Ciencia y Innovación PID2024-163070OB-I00
2. Halide perovskites as low switching power neuromorphic devices, Fundacion BBVA, 2023
3. DAAD-Prime incoming fellowship (Germany) host a Postdoc researcher, 2023-2024.
4. ENSOL3, Coordinated Industrial Project, Basque Government industrial Project (2023-2024)
5. Interface tuning of perovskite solar cells through MXenes (INTERACTION), PID2021-129085OB-I00, Ministerio de Ciencia y Innovación (2022-2024).
6. 2D-Transition Metal Dichalcogenides as Charge Transporting Layers for Highly Efficient Perovskite Solar Cells, H2020-MSCA-IF-2019, PI, Researcher: Dr. Peng Huang
7. Lead free perovskites & chalcogenide as charge selective layers, RTI2018-102292-B-100, MINECO (2019-2021)
8. Printable kesterites Solar Cells and interface optimization for high-performance devices (PISCES) Basque Government (2018-2021)
9. Molecular engineering of Materials & process for perovskite solar technology (MOLEMAT), 2017-2022, ERC Consolidator grant-2016

C.4. Contracts, technological or transfer merits

1. Private work contract from a French enterprise, 2025-26.
2. Halide perovskites as Low Switching Power Neuromorphic Devices, Fundacion BBVA, 2023
3. Worked in a private R&D institute as a leader and spearheaded technological projects.

Patents: 7 families of Patents
1. Process for the preparation of solid polymer electrolytes using ionic liquids
United States PTO 20100084600
S. Ahmad, S.A. Agnihotry, M. Deepa
Entity holder of rights: Council of Scientific & Industrial Research, India.
Country: USA, JAPAN, Germany, India
2. High-performance perovskite-sensitized mesoscopic solar cells
J. Burschka, N. Pellet, **S. Ahmad**, M. K. Nazeeruddin and M. Grätzel
European Patent, PCT /EP2014/059124.
Entity holder of rights: Abengoa Research, Spain
Country: USA, JAPAN, Germany, India, Mexico, EU, South Korea
3. Alkali ion battery and method for producing the same
D. C. Juaréz, **S. Ahmad**, C. P. Vicente, M. Doblare, J. L. Tirado
European Patent (PCT/EP2015/002711A1)
Entity holder of rights: Abengoa Research, Spain
Country: EU, Spain
4. Substituted polycyclic aromatic compound as a hole transport material in perovskite-based solid-state solar cells (P201431324)
S. Ahmad, F. J. Ramos, S. Kazim, M. Doblare, M. K. Nazeeruddin and M. Grätzel
Entity holder of rights: Abengoa Research, Spain
Country: EU, Spain
5. Triazatruxene-based molecularly engineered soluble molecules as hole transporter for perovskite solar cells (PCT/ES2015/070864)
S. Ahmad, F. J. Ramos, S. Kazim, M. Doblare, M. K. Nazeerudin, and M. Grätzel
Entity holder of rights: Abengoa Research, Spain
Country: EU, Spain
6. Organic Hole Transport Materials Containing an Ionic Liquid
L. Calio, M. Salado, S. Kazim, **S. Ahmad**. PCT/ES2017/070168
Entity holder of rights: Abengoa Research, Spain
Country: EU, Spain
7. Organic Hole Transport Materials for opto-electronic devices
L. Calio, M. Salado, S. Kazim, **S. Ahmad** P201631098
Entity holder of rights: Abengoa Research, Spain
Country: EU, Spain

Popular Science Articles

The emergence of perovskite-based photovoltaics (mappingignorance.org)
European Commission Highlight for one of our projects
Can anything be a solar panel? (Europa.eu)
Bringing perovskite solar cells closer to commercialisation | SMILIES Project | Results in brief | H2020 | CORDIS | European Commission (europa.eu)
Substance and Shadow of COP 27, Science Reporter, February 2023
Blog: (The Energy of Change) and **World Economic Forum**
UN Climate Summit: https://www.weforum.org/agenda/2019/12/what-did-we-learn-from-the-latest-round-of-climate-talks/
Solar cells: https://www.weforum.org/agenda/2019/08/this-new-solar-tech-can-be-printed-on-paper-or-woven-into-fabric/