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Professor (**Highly Cited Researcher by Clarivate; Top 2% Scientist by Stanford/Elsevier**)
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## ACADEMIC QUALIFICATIONS

- Ph.D. (Mech. Mat.), University of Reading, The United Kingdom, 1997
- M.Eng. (Mat. Sci. & Eng.), Hefei University of Technology, China, 1987
- B.Eng. (Met. & Mat. Sci.), China University of Mining and Technology, China, 1984

## PROFESSIONAL EXPERIENCE

- March 2000 – present: Professor / Associate Professor / Assistant Professor, School of Materials Science & Engineering, Nanyang Technological University, Singapore
  - April 2011 – March 2018: Director, Advanced Materials Research Centre, NTU
  - July 2009 – July 2014: Assistant Chair (Undergraduates), School of MSE, NTU
- April 1997 – March 2000: Research Fellow / Research Associate, Institute of Materials Research and Engineering, Singapore
- May 1992 – April 1997: Research Student Assistant / Visiting Researcher, Department of Engineering, University of Reading, U.K.
- June 1987 – May 1992: Lecturer / Assistant Lecturer, Department of Materials Science and Engineering, Hefei University of Technology, China

## RESEARCH INTERESTS

- Thin Films & Nanostructured Materials: Thin films & engineered nanostructures for environmental and clean energy applications; Electronic thin films; Protective and functional surface coatings.
- Mechanical & Long-term Behaviours of Materials: Fracture, fatigue, and creep of bulk monolithic & composite materials, thin films and multi-layers; Experimental and computational mechanics; Materials degradation and failure analysis.

## INTERNATIONAL CONFERENCE ORGANIZATION

- Organizer for more than 70 times of international conferences in the capacity of organizing committee members, scientific committee member, technical committee member, and symposium chair, etc.

## EDITORSHIP

- Editorial Advisory Board (Mar 2006 – Jan 2019), Circuit World, Emerald (ISSN: 0305-6120)
- Area Editor & Editorial Board (Aug 2009 – Jun 2016), Simulation Modelling Practice and Theory, Elsevier (ISSN: 1569-190X)
- Editorial Committee (Jul 2012 – ), China Surface Engineering (中国表面工程), Chinese Mechanical Engineering Society (ISSN: 1007-9289)

- Editorial Board (Jun 2014 – Dec 2020), Mechanics of Advanced Materials and Modern Processes, Springer (ISSN: 2198-7874)
- Editor (May 2017 – ) of Mechanics of Advanced Materials book series, Elsevier
- Editorial Board (Nov 2017 – ), Surfaces, MDPI AG, Switzerland (ISSN: 0004-0004)
- Editorial Board (May 2018 – ) of Surface Technology (表面技术), published by China South Industries Group Corporation (ISSN: 1001-3660)

- Guest Editor, Key Engineering Materials, Vol. 227: Special issue on "Modeling of Materials", Trans Tech Publications 2002 (ISSN: 1013-9826)
- Guest Editor, Materials Science and Engineering A, Vol. 423 (Nos. 1-2): Special issue on "Mechanical Behaviour of Micro- and Nano-scale Systems", Elsevier 2006 (ISSN: 0921-5093)
- Guest Editor, Thin Solid Films, Vol. 517 (No. 17), Elsevier 2009 (ISSN: 0040-6090)
- Guest Editor, Journal of Nanoscience and Nanotechnology, Vol. 10 (No. 7), American Scientific Publishers 2010 (ISSN: 1533-4880)
- Guest Editor, International Journal of Modern Physics B, Vol. 24 (Nos. 1-2), World Scientific 2010 (ISSN: 0217-9792)
- Guest Editor, Thin Solid Films, Vol. 519 (No. 15), Elsevier 2011 (ISSN: 0040-6090)
- Guest Editor, Thin Solid Films, Vol. 544, Elsevier 2013 (ISSN: 0040-6090)
- Guest Editor, Thin Solid Films, Vol. 584, Elsevier 2015 (ISSN: 0040-6090)
- Guest Editor, Journal of Nanomaterials: Special issue on "$TiO_2$-based Nanomaterials: Design, Synthesis, and Applications", Hindawi Pub. Corp. 2015 (ISSN: 1687-4110)
- Guest Editor, Materials & Design, Virtual Special Issue on "Recent Advances in Materials for Sports Technology", Elsevier 2016 (ISSN: 0261-3069)
- Guest Editor, Surface and Coatings Technology, Vol. 320, Elsevier 2017 (ISSN: 0257-8972)
- Guest Editor, Materials & Design, Virtual Special Issue on "Materials & Design for Sports Technology", published by Elsevier 2018 (ISSN: 0261-3069)
- Guest Editor, Coatings, Special issue on "Thin Films for Energy Harvesting, Conversion, and Storage", MDPI 2019 (ISSN: 2079-6412)
- Guest Editor, Surface and Coatings Technology, Virtual Special Issue for Thin Films 2018 papers, Elsevier 2019 (ISSN: 0257-8972)

**REVIEWER FOR INTERNATIONAL JOURNALS**

ACS Applied Materials & Interfaces; ACS Materials Letters; ACS Omega; ACS Sustainable Chemistry & Engineering; Acta Materialia; Advanced Functional Materials; Advanced Materials; Angewandte Chemie; Applied Catalysis A: General; Applied Catalysis B: Environmental; Applied Physics Letters; Applied Surface Science; Beilstein Journal of Nanotechnology; Chemical Engineering Journal; Chinese Journal of Catalysis; Circuit World; Composites Science and Technology; CrystEngComm; Electrochemistry Communications; Energy & Environmental Science; Engineering Fracture Mechanics; Environmental Science & Technology; IEEE Transactions on Advanced Packaging; IEEE Transactions on Components and Packaging Technologies; IEEE Transactions on Device and Materials Reliability; IEEE Transactions on Electronics Packaging Manufacturing; International Journal of Computational Methods; International Journal of Fracture; International Journal of Modern Physics B; International Journal of Photoenergy; Journal of Alloys and Compounds; Journal of Applied Physics; Journal of Colloid and Interface Science; Journal of Composite Materials; Journal of Electronic Materials; Journal of Electronic Packaging; Journal of Hazardous Materials; Journal of Materials Chemistry A; Journal of Materials Chemistry C; Journal of Materials Research; Journal of Materials Science: Materials in Electronics; Journal of Materials Science & Technology; Journal of Mechanical Engineering Science; Journal of

Molecular Catalysis A: Chemical; Journal of Nanoscience and Nanotechnology; Journal of Solid State Chemistry; Key Engineering Materials; Korean Journal of Chemical Engineering; Langmuir; Materials Characterization; Materials Chemistry and Physics; Materials & Design; Materials Letters; Materials Science and Engineering A; Materials Science and Engineering B; Mechanics of Advanced Materials and Modern Processes; Metallurgical and Materials Transactions A; Microelectronic Engineering; Microelectronics Reliability; Microsystem Technologies; Molecules; Nanoscale; Nanoscience and Nanotechnology Letters; Nature Catalysis; Nature Communications; Physical Chemistry Chemical Physics; Polymers for Advanced Technologies; Progress in Organic Coatings; RSC Advances; Scientific Reports; Scripta Materialia; Semiconductor Science and Technology; Simulation Modelling Practice and Theory; Small; Soldering & Surface Mount Technology; Solid State Phenomena; Spectroscopy and Spectral Analysis; Surface and Coatings Technology; Surfaces; Surfaces and Interfaces; Surface and Interface Analysis; The Journal of Physical Chemistry; The Journal of Physical Chemistry Letters; Thin Solid Films; Tribology International

**SELECTED RESEARCH PROJECTS** (in reverse chronological order)

- "A novel, highly durable and repellent coating technology", Industry funded, Sep 2025-Mar 2027, Principal Investigator
- "Epoxy Mold Compounds for High Voltage Applications", Industry funded, Jan 2025-Jan 2029, Principal Investigator
- "Hybrid surfaces towards atmospheric dew water harvesting", MOE Tier 1 grant RG 7/24, 01 Nov 2024-31 Oct 2027, Principal Investigator
- "Ceramic-fibre metal-matrix composites: interface and manufacturing", Industry funded, Feb 2024-Aug 2026, Principal Investigator
- "Large-scale applications of carbon in concrete", funded under NRF IAF-ICP scheme, Feb 2024-Jan 2029, Co-Principal Investigator & Principal Investigator of WP2
- "Surface Functionalization of Polymeric Materials using Plasma Technique towards Practical Applications", MOE Tier 1 grant RG 8/21, Nov 2021-Oct 2024, Principal Investigator
- "Distribution Switchgear Degradation Study", jointly funded by SP PowerAssets Ltd (SP) and Energy Market Authority (EMA), Jan 2021-Jun 2024, Principal Investigator
- "Internet of Things", funded under NRF IAF-ICP scheme, Jan 2019-Jan 2024, Program Principal Investigator
- "Soft Magnetic Materials Development for High Performance Aerospace Electrical Machines", funded under NRF IAF-ICP scheme, Jan 2019-Jan 2024, Principal Investigator
- "Fast treatment of gaseous pollutants through synergistic photocatalytic-plasma actions", MOE Tier 1 grant RG 16/18, Nov 2018-Oct 2021, Principal Investigator
- "Quantifying the effect of lattice defects in semiconductor oxides towards more efficient photoelectrochemical fuel generation", MOE Tier 1 grant RG 15/16, Nov 2016-Oct 2018, Principal Investigator
- "Development of water based bio-epoxy coatings for easy-cleaning, anti-corrosion and anti-icing applications", A*Star SERC Grant No. 1528000048, Feb 2016-Jan 2019, Principal Investigator
- "Project SMART", Industry funded, Jan 2016-Dec 2019, Principal Investigator
- "Intermetallic Compound Formation between Palladium-coated Copper Wires and Aluminum Bond Pad", International collaboration program funded by NTU, Jul 2015-Jun 2016, Principal Investigator
- "Application-driven understanding and engineering of materials structures", internal grant awarded by CoE NTU, Mar 2014-Feb 2017, Principal Investigator

- "Development of efficient photocatalysts for solar fuel generation" (A sub-project funded by the Singapore Berkeley Institute for Sustainable Energy through NRF's CREATE scheme), Apr 2013-Mar 2018, project Principal Investigator
- "Braided Composite Modelling – Failure Analysis and Progressive Damage Prediction", funded by Defence Research & Technology Office (DRTech), Dec 2012-Nov 2015, Principal Investigator
- "Electrodeposition of gold and nickel films for smart card application", Industry funded, Aug 2012-Aug 2016, Principal Investigator
- "Study of process responses, intermetallics and reliability of palladium-copper wire bonding", Industry funded, Jan 2012-Jan 2016, Principal Investigator
- "Multi-functional sol-gel coatings for wind-turbine blade protection", Industry funded, Sep 2011-Sep 2014, Principal Investigator
- "Modelling of Braided Textile Composites", funded by Defence Science and Technology Agency (DSTA) TL/POD0814080/01, Jun 2009-Sep 2012, Principal Investigator
- "Low-temperature Solution-processed Protonated Titanium Oxides for Photocatalytic Applications", National Research Foundation (NRF) / Environment and Water Industry Development Council (EWI) grant MEWR 651/06/160, Jan 2009-Dec 2011, Principal Investigator
- "Ultra-fine Pitch Copper Interconnections for Future Generation Miniaturised Devices", The British Council PMI2 Strategic Alliances and Partnerships project (Research Co-operation strand) RC 41, Apr 2008-Dec 2010, Lead Researcher
- "Development of Damage- and Failure-Resistant Nanostructured and Interfacial Materials", University Research Committee RG 31/06, Oct 2006-Oct 2008, Principal Investigator
- "Design and Construction of A Photocatalytic Reactor for Hydrogen Generation", Office of Research, Nanyang Technological University RG 112/05, Feb 2006-Feb 2007, Principal Investigator
- "Nanostructured Materials, Systems and Devices", University Research Council RG 14/03, Apr 2004-Apr 2007, Principal Investigator
- "Intrinsic Stress in Electroless Nickel Plating and Its Effect on Reliability", NTU AcRF grant RG 19/00, Dec 2000-Nov 2003, Principal Investigator

**SERVICES HIGHLIGHT (MSE / NTU)** (in reverse chronological order)

- Director, Master of Science Program in Applied Materials Analytics
- Chair, MSE School Review Committee (SRC) for Educator-track & Practice-track Promotion
- Chair, MSE Task Force on Transforming MSE Graduate and Continuous Education
- Cluster Director, Energy Research Institute at NTU
- Program Director, Rolls-Royce Corporate Lab at NTU
- Chair of EAB Accreditation Committee for BEng (Materials Engineering), School of MSE
- Senator of the Academic Council, NTU (elected)
- Chair, School / College Search Committee for New Faculty Appointment (for all levels)
- Chair, School Review Committee for Promotions and Tenure (Research track)
- Chair, Committee for Students' Global Experience, School of MSE
- Director, Advanced Materials Research Centre, NTU
- Assistant Chair (Undergraduates), School of MSE
- Chair, Nanyang Research Program Committee, NTU
- Member, Singapore Science and Engineering Fair Working Committee, Ministry of Education Singapore
- Member, Curriculum Review Committee, School of MSE
- Member, Aerospace Engineering Task Force & Curriculum Committee, NTU

- Member, MSE School Advisory Committee (appointed by NTU president)
- Lab Director, Surface Engineering Lab, School of MSE
- Final Year Project Coordinator, School of MSE

## **PUBLICATIONS** (in reverse chronological order)

**Patents (granted, based on filing date)**

1. Chinese Patent ZL201980064538X (filed on 30 Mar 2021, **granted** on 05 January 2024), "Janus Particle Preparation Through Two-Phase Interface Assembly"
2. US Patent 10,851,265 (filed on 01 Aug 2019; **granted** on 01 December 2020), "Polymeric Composition with Anti-icing and Self-cleaning Properties"
3. US Patent 10,355,366 (filed on 25 May 2016; **granted** on 16 July 2019), "Microwave Absorbing Composite For Turbine Blade Applications"
4. Singapore Patent 183898 (filed on 04 September 2012; **granted** on 30 Sep 2013) / US Patent 9,738,986 (filed on 08 March 2011; **granted** on 22 Aug 2017), "Method Of Manufacturing Layered Metal Oxide Particles And Layered Metal Oxide Particles Formed Thereof"
5. Singapore Patent 178248 (filed on 11 Aug 2010; **granted** on 30 Apr 2012) / US Patent 9,868,109 (filed on 11 Aug 2010; **granted** on 16 Jan 2018), "Titanate / Titania Composite Nanoparticle"
6. US Patent 8,647,922 (filed on 08 Nov 2007; **granted** on 11 Feb 2014), "Method of Forming an Interconnect on a Semiconductor Substrate"
7. US Patent 6,776,050 (filed on 28 Sep 2001; **granted** on 17 Aug 2004), "Support for Bending Test of Flexible Substrates"
8. US Patent 6,797,211 (filed on 13 Jun 2001; **granted** on 28 Sep 2004) / Taiwan Patent 529182 (filed on 07 Jul 2000; **granted** on 21 Apr 2003) / European Patent 1133789 (filed on 09 Jul 1999; **granted** on 05 Nov 2008), "Mechanical Patterning of A Device Layer"

**Book Chapters**

1. C. Wang, Z. Chen, A. Roy, V. V. Silberschmidt "Energy absorption of composite shin-guard structure under low-energy impacts", Invited contribution of Chapter 20 in: *Dynamic Deformation, Damage, and Fracture in Composite Materials and Structures*, 2nd edition (Book Editor: Vadim V. Silberschmidt), Elsevier, 2023, pp. 623-637 (ISBN: 9780128239797)
2. Z. Chen, T. T. Lim "Nanostructured Catalytic and Adsorbent Materials for Water Remediation", Invited contribution of Chapter 4 in: *50 Years of Materials Science in Singapore* (Editors: F. Boey, B. V. R. Chowdari, S. S. Venkatraman), World Scientific Publishing, 2016, pp. 75-111, (ISBN: 9789814730693)
3. Z. Chen, L. Y. L. Wu "Scratch Damage Resistance of Silica-based Sol-Gel Coatings on Polymeric Substrates", Invited contribution of Chapter 14 in: *Tribology of Polymeric Nanocomposites: Friction and Wear of Bulk Materials and Coatings*, 2nd edition (Book Editors: K. Friedrich and A. K. Schlarb), Elsevier, 2013, pp. 467-511 (ISBN: 9780444594556)
4. Y. K. Lai, C. J. Lin, Z. Chen "Extremely Wetting Pattern by Photocatalytic Lithography and Its Application", Invited book chapter in *Recent Advances in Nanofabrication Techniques and Applications* (Book Editor: B. Cui), InTech, 2011, pp. 591-614 (ISBN 9789533076027)
5. Z. Chen, L. Y. L. Wu "Scratch Resistance of Protective Sol-Gel Coatings on Polymeric Substrates", Invited contribution of Chapter 14 in: *Tribology of Polymeric Nanocomposites: Friction and Wear of Bulk Materials and Coatings* (Book Editors: K. Friedrich and A. K. Schlarb), Elsevier, 2008, pp. 325-353 (ISBN: 9780444531551)
6. B. Cotterell, Z. Chen, A. G. Atkins "On the Extension of the $J_R$ Concept to Significant Crack Growth", Invited contribution to *Multiscale Deformation and Fracture in Materials and Structures*, Solid Mechanics and Its Applications series - Volume 84 (The James R. Rice 60th Anniversary Volume, edited by T.-J. Chuang and J. W. Rudnicki), Springer, 2002, pp. 223-236 (ISBN: 9781402003813)

**Journal Articles**

**2026**

1. C. Li, Y. H. Li, J. Shi, B. Li, K. Atmadja, X. Y. Wang, D. Wu, Y. M. Gao, P. C. Bai, Z. Chen "Microstructure, interfacial bonding, and abrasive wear properties of Fe-based composites reinforced with oxide ceramic particles", *Ceramics International*, 2026, Vol. 52, pp. 34713-34726
2. S. L. Zhao, W. Che, C. Q. Li, C. C. Wang, Z. H. Zhu, Y. A. Ji, X. F. Cao, Z. Chen, A. B. Chen, J.-B. Baek "Adaptive Strong Metal-Support Interactions Enabled by Pyridinic Nitrogen Regulate Hydrogen Kinetics on Ruthenium for pH-Universal Hydrogen Evolution", *ACS Catalysis*, 2026, Vol. 16, pp. 9387-9396
3. J. W. Jiang, Y. Z. Shen, W. L. Liu, S. Y. Liu, L. F. Zhao, Y. Pan, Z. Y. Wang, Z. Chen, J. Tao "Dynamic Anti/de-icing Hierarchical Structure for Flow Environments with Microdroplets: Enhanced Icephobicity Attributed to the Synergistic Interplay between Aerodynamic Properties and Superhydrophobicity", *Advanced Functional Materials*, 2026, Vol. 36, Article e30329

4. S. N. Ke, J. Zhang, M. Pan, J. Y. Huang, J. Hu, Y. K. Lai, Z. Chen "Judicious Design and Rapid Fabrication of a Robust Antifouling Coating with Mechanical Resistance and Chemical Durability", *ACS Applied Materials & Interfaces*, 2026, Vol. 18, pp. 22438-22449
5. Y. H. Deng, Q. Wang, Z. Y. Pan, Y. Yang, M. Yap, Z. P. Lv, Q. Z. Huang, W. K. Chern, Z. Chen "Manufacturing-induced voids in epoxy insulators and their effect on dielectric breakdown", *Polymer Degradation and Stability*, 2026, Vol. 247, Article 112022
6. X. F. Cao, J. Z. Tian, J. R. Cheng, Y. L. Liu, D. Ma, J. Hu, Z. Chen "Design of ion-doped Mn-P catalysts for enhanced hydrogen evolution: From computation to experiment", *Chemical Engineering Journal*, 2026, Vol. 529, Article 172940
7. L. Y. A. Choong, Z. Chen, M.-F. Ng "Discovery of Effective Halide Solid Electrolytes for Solid-State Rechargeable Batteries via Machine Learning and DFT Calculations", *ACS Applied Energy Materials*, 2026, Vol. 9, pp. 507-520
8. J. W. Jiang, Y. Z. Shen, X. F. Nong, W. L. Liu, S. Y. Liu, J. Tao, Z. Chen "Mechanochemically Durable Coating via Sol-Gel Synthesis of Polysiloxane for Aircraft Applications: Omniphobic Property and Anti/de-icing Performance without Microstructure", *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 2026, Vol. 730, Article 138988

**2025**

9. J. W. Jiang, Y. Z. Shen, E. Q. Zhou, W. L. Liu, S. Y. Liu, Z. Y. Wang, J. Tao, Z. Chen "Systematic investigation into the contribution magnitudes of surface energy and microstructure to the anti/de-icing performance for superhydrophobic materials", *Chemical Engineering Journal*, 2025, Vol. 525, article 170533
10. X. H. Wu, X. Zhou, K. H. Xu, G. H. Tan, J. X. Mai, Z. L. Ye, Y. K. Lai, J. Y. Huang, J. Hu, Z. Chen "Nano-grid Enhanced Hierarchical Structure Construction for A Durable Bendable Anti-condensation and Passive-active Anti/deicing Surface", *Journal of Materials Chemistry A*, 2025, Vol. 13, pp. 32886-32898
11. C. Li, B. Li, Y. M. Gao, Z. Cao, X. J. Yao, D. Wu, P. C. Bai, Z. Chen "Microstructure, electrical, and tribological properties of copper matrix composites reinforced from dual-scale boride ceramic particles", *Wear*, 2025, Vol. 580-581, Article 206276
12. C. Li, J. Shi, B. Li, W. J. Ren, Z. Cao, L. Wei, D. Wu, Y. M. Gao, P. C. Bai, Z. Chen "Interfacial Characteristics, Electrical Conductivity, Mechanical Performance, and Tribology Behavior of $ZrB_2$/Cu Composites", *Materials & Design*, 2025, Vol. 256, Article 114366
13. B. J. Luo, X. Liu, K. Ma, C. Y. Dai, R. D. Li, J. Hu, B. R. Zhao, Z. Chen, C. S. Song, X. X. Ma "Plasma-driven $NH_3$ Synthesis from $N_2$ and $H_2O$ over Ni-Co/$CeO_x$ with Nearly 100% Selectivity", *Applied Catalysis B: Environmental and Energy*, 2025, Vol. 379, Article 125677
14. S. Tao, Z. Chen, J. P. Fei, H. Li, Z. G. Fang, C. H. Lu "Switchable bilayer energy saving window for multispectral photothermal modulation", *Building and Environment*, 2025, Vol. 282, Article 113283
15. J. B. Cao, J. Wang, Z. N. Li, B. W. Cao, Z. C. Wang, X. F. Cao, Z. Chen, G. Q. Zhu "Oxygen vacancies modified 2D/2D Z-scheme heterojunction of Ce-doping BiOBr/g-$C_3N_4$ to trigger efficient $CO_2$ photoreduction", *Separation and Purification Technology*, 2025, Vol. 372, Article 133484
16. C. Li, J. Shi, B. Li, Zhen Cao, L. Wei, Z. Q. Yu, D. Wu, Y. M. Gao, P. C. Bai, Z. Chen "Influence of $CrB_2$ micro/nanoparticles on the microstructural characteristics, mechanical performances, and lubrication mechanisms of Cu matrix composites", *Journal of Alloys and Compounds*, 2025, Vol. 1030, Article 180949
17. S. N. Ke, J. N. Li, R. D. Li, J. B. Zhu, Y. Chen, J. Hu, Y. K. Lai, J. Y. Huang, X. H. Wu, Z. Chen "Recent developments in the fabrication, performance, and application of transparent superhydrophobic coatings", *Advances in Colloid and Interface Science*, 2025, Vol. 342, Article 103537
18. J. W. Jiang, Y. Z. Shen, Y. J. S. Xu, Z. Wang, S. Y. Liu, Y. Y. Lin, J. Tao, Z. Chen "Excellent Dynamic Non-Wetting Performance Induced by Asymmetric Structure at Low Temperatures: Retraction Actuation and Nucleation Inhibition", *Advanced Science*, 2025, Vol. 12, Article 2500590
19. X. R. Zang, Y. Cheng, Y. M. Ni, W. W. Zheng, T. X. Zhu, Z. Chen, J. Bian, X. W. Cao, J. Y. Huang, Y. K. Lai "A Biomimetically Constructed Superhydrophobic Coating with Excellent Mechanical Durability and Chemical Stability for Gas Transmission Pipeline", *Engineering*, 2025, Vol. 47, pp. 152-159
20. S. J. Yang, Y. C. Zhu, C. M. Wang, R. D. Li, J. Hu, Z. Chen "Evaluation of hydrogen trapping capability at interfaces between vanadium carbide and vanadium nitride nanoprecipitates with α-Fe by density functional theory", *Coatings*, 2025, Vol. 15, Article 466
21. H.-B. Yuan, L. Wei, J. P. Wang, M. M. Zhao, G. Q. Chen, T. L. Xing, Z. Chen "Robust and Breathable Electronic Textiles with Anti-icing and Photothermal De-icing Properties Modified by ZIF-8/Polypyrrole", *Chemical Engineering Journal*, 2025, Vol. 509, Article 161569
22. B. Li, Y. M. Gao, C. Li, Z. Cao, X. J. Yao, D. Wu, P. C. Bai, Z. Chen "Influence of $MoB_2$ and $ZrB_2$ ceramic particles on the microstructure, electrical conductivity, and mechanical properties of copper matrix composites", *Ceramics International*, 2025, Vol. 51, pp. 9257-9269
23. Y. H. Deng, Y. W. Wong, L. K. Y. Teh, Q. Wang, W. F. Sun, W. K. Chern, J. T. Oh, Z. Chen "Optimizing Dielectric, Mechanical, and Thermal Properties of Epoxy Resin through Molecular Design for Multifunctional Performance", *Materials Horizons*, 2025, Vol. 12, pp. 1323-1333

24. C. Li, B. Li, Y. M. Gao, Z. Cao, X. J. Yao, D. Wu, P. C. Bai, Z. Chen "Evolution of the microstructure, electrical, and tribological properties of copper-based composites reinforced with $MoB_2$ ceramic particles", *Journal of Alloys and Compounds*, 2025, Vol. 1017, Article 179150
25. Q. Wang, W. X. He, Y. H. Deng, Y. Zhang, W. K. Chern, Z. P. Lv, Z. Chen "Machine learning-driven interfacial characterization and dielectric breakdown prediction in polymer nanocomposites", *Composites Part B: Engineering*, 2025, Vol. 296, Article 112226
26. Q.-Y. Wang, Y. C. Zhu, R. Jiang, G. He, J. Zhao, J. Hu, T. Liu, H. H. Liu, S.-L. Loo, Z. Chen, J.-X. Wang, Z. Y. Pan, X. N. Li, D. P. Cao, Z.-T. Hu "Structure matching mechanism of nRu/$FeCo_2O_4$ for highly-selective oxidation of HMF toward FDCA", *AIChE Journal*, 2025, Vol. 71, Article e18671
27. X. Y. Duan, Y. Z. Mi, T. Y. Lei, X. Y. D. Ma, Z. Chen, J. H. Kong, X. H. Lu "Highly elastic sponge-like hydrogels for impedance-based multimodal sensing", *ACS Nano*, 2025, Vol. 19, pp. 2909-2921
28. J. P. Fei, D. Han, K. Zhou, S. W. Koh, J. Y. Ge, J. Y. Tan, B. F. Ng, Z. Chen, L. L. Cai, H. Li "Electrostatic repellent dispersion method for green and cost-effective aqueous radiative cooling paint", *Building and Environment*, 2025, Vol. 269, Article 112462
29. S. L. Zheng, D. A. Bellido-Aguilar, X. H. Wu, X. T. Zeng, Z. Chen "Waterborne superhydrophobic bio-epoxy coating on Al alloy for corrosion-resistant and self-cleaning applications", *Surface and Coatings Technology*, 2025, Vol. 496, Article 131621
30. B. Li, Y. M. Gao, C. Li, Z. Cao, X. J. Yao, D. Wu, P. C. Bai, Z. Chen "Microstructural characteristics, electrical conductivity and mechanical properties of Cu matrix composites reinforced with dual-phase borides", *Journal of Materials Research and Technology*, 2025, Vol. 34, pp. 1-14
31. Y. H. Deng, Q. Wang, Z. Y. Pan, Z. P. Lv, W. K. Chern, J. T. Oh, Z. Chen "Unravelling the Role of Filler Surface Wettability in Long-Term Mechanical and Dielectric Properties of Epoxy Resin Composites under Hygrothermal Aging", *Journal of Colloid and Interface Science*, 2025, Vol. 682, pp. 50-59

**2024**

32. H. Zhao, X. Zhao, J. J. Zhang, S. Anandita, W. Liu, S. W. Koh, S. Y. Yu, C. J. Li, Z. Chen, R. Xu, Z. G. Zou, W. G. Tu, and H. Li "Solar-Driven Photoelectrochemical Upcycling of Polyimide Plastic Waste with Safe Green Hydrogen Generation", *Advanced Energy Materials*, 2024, Vol. 14, Article 2400037
33. Y. F. Li, Y. Tan, M. K. Zhang, J. Hu, Z. Chen, L. S. Su, J. Y. Li "Improved Nitrate-to-Ammonia Electrocatalysis through Hydrogen Poisoning Effects", *Angewandte Chemie International Edition*, 2024, Vol. 63, Article e202411068
34. L. Wei, H. S. Soo, Z. Chen "Patterned hybrid surfaces for efficient dew harvesting", *ACS Applied Materials & Interfaces*, 2024, Vol. 16, pp. 51715-51726
35. S. L. Wei, Y. F. Zhang, H. J. Tan, Z. Q. Xia, L. J. Zhai, J. Hu, Q. Yang, G. Xie, Z. Chen, S. P. Chen "In Situ MOF-74-Pyrolysis-Generated Porous Carbon Supporting Spinel $Cu_{0.15}Co_{2.85}O_4$/C Boosts Ammonium Perchlorate Accelerating Decomposition: Precise Cu Doping Modulating Oxygen Vacancy Concentration", *Small*, 2024, Vol. 20, Article 2400712
36. J. Li, W. C. Jiao, H. Z. Jin, H. M. Sun, Y. H. Jia, Z. Chen, X. D. He "Durable one-component polyurea icephobic coatings with energy-saving performance in electrical heating de-icing", *Chemical Engineering Journal*, 2024, Vol. 498, Article 155793
37. Z. Q. Li, Z. Chen, J. T. Oh, V. Gill, A. Lambourne "Improving the mechanical and magnetic properties of equiatomic FeCo-2V alloy through mild magnetic field annealing", *Metallurgical and Materials Transactions A*, 2024, Vol. 55A, pp. 4061-4071
38. L. Wei, P. Y. Wang, X. Y. Chen, Z. Chen "Water vapor condensation behavior on different wetting surfaces via molecular dynamics simulation", *Surfaces and Interfaces*, 2024, Vol. 52, Article 104981
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