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2025

Intermediate-range solvent templating and counterion behaviour at charged carbon nanotube surfaces.
Di Mino C, Headen TF, Basma NS, Buckley DJ, Cullen PL, Wilding MC, Shaffer MSP, Skipper NT, Clancy AJ and Howard CA. *Nature Nanotechnology* 1-7. Springer Nature.

Hydrogen Induced Phase Transition in TiZrNbHfV_{1-x}Ta_x High Entropy Alloys.

Greaves F, Bouzidi A, Perriere L, Vaughan G, Nassif V, Laversenne L, Borgschulte A, Martins ML, Cheng Y, Ramirez-Cuesta AJ, Szilagyi PA, Cullen P and Zlotea C. *The Journal of Physical Chemistry C* vol. 129, (6) 2904-2912. American Chemical Society (AcS).

2024

Investigating the effect of FeN 5 configuration in the oxygen reduction reaction using N-heterocycle functionalized carbon nanotubes.

Li Q, Zhao Q, Pedersen A, Zhang M, Lin Z, Xu Y, Cullen PL, Sapelkin A, Di Tommaso D, Titirici M-M and Jones CR. *Journal of Materials Chemistry A* vol. 12, (41) 28074-28084. Royal Society of Chemistry (Rsc).

Controlling nanocluster growth through nanoconfinement: the effect of the number and nature of metalorganic framework functionalities.

King J, Lin Z, Zanca F, Luo H, Zhang L, Cullen P, Danaie M, Hirscher M, Meloni S, Elena AM and Szilgyi PÁ. *Physical Chemistry Chemical Physics. Royal Society of Chemistry.*

2023

2023 roadmap for potassium-ion batteries.

Xu Y, Titirici M, Chen J, Cora F, Cullen PL, Edge JS, Fan K, Fan L, Feng J, Hosaka T, Hu J, Huang W, Hyde TI, Imtiaz S, Kang F, Kennedy T, Kim EJ, Komaba S, Lander L, Le Pham PN, Liu P, Lu B, Meng F, Mitlin D, Monconduit L, Palgrave RG, Qin L, Ryan KM, Sankar G and Scanlon DO. *Jphys Energy* vol. 5, (2). IOP Publishing.

Ex Situ Characterization of 1T/2H MoS₂ and Their Carbon Composites for Energy Applications, a Review.

Marinov AD, Bravo Priegue L, Shah AR, Miller TS, Howard CA, Hinds G, Shearing PR, Cullen PL and Brett DJL. *Acs Nano* vol. 17, (6) 5163-5186. American Chemical Society.

2022

A new high: Cannabis as a budding source of carbon-based materials for electrochemical power sources.

Rana ZI, Shah AR, Llewellyn AV, Mazloomian K, McAlernon P, Miller TS, Cullen PL, Shearing PR and Brett DJL. *Current Opinion in Electrochemistry* vol. 31. Elsevier.

2021

Neutron studies of Na-ion battery materials.

Shah AR, Shutt RRC, Smith K, Hack J, Neville TP, Headen TF, Brett DJL, Howard CA, Miller TS and Cullen PL. *Jphys Materials* vol. 4, (4).

A novel fuel cell design for operando energy-dispersive x-ray absorption measurements.

Leach AS, Hack J, Amboage M, Diaz-Moreno S, Huang H, Cullen PL, Wilding M, Magliocca E, Miller TS, Howard CA, Brett DJL, Shearing PR, McMillan PF, Russell AE and Jervis R. *Journal of Physics Condensed Matter* vol. 33, (31).IOP Publishing.

2020

Realising the electrochemical stability of graphene: scalable synthesis of an ultra-durable platinum catalyst for the oxygen reduction reaction.

Angel GMA, Mansor N, Jervis R, Rana Z, Gibbs C, Seel A, Kilpatrick AFR, Shearing PR, Howard CA, Brett DJL and Cullen PL. *Nanoscale*.

Use of X-ray computed tomography for understanding localised, along-the-channel degradation of polymer electrolyte fuel cells.

Hack J, Rasha L, Cullen PL, Bailey JJ, Neville TP, Shearing PR, Brandon NP and Brett DJL. *Electrochimica Acta* vol. 352,.

2019

Lignin-derived electrospun freestanding carbons as alternative electrodes for redox flow batteries.

Jorge Sobrido A, Jervis R, Crespo Ribadeneyra M, Grogan L, Au H, Schlee P, Herou S, Neville T, Cullen P, Kok M, Hosseinaei O, Tomani P, Titirici M, Brett D and Shearing P. *Carbon*.Elsevier.

The liquid structure of the solvents dimethylformamide (DMF) and dimethylacetamide (DMA).

Basma N, Cullen PL, Clancy AJ, Shaffer MSP, Skipper NT, Headen TF and Howard CA. *Molecular Physics* vol. 117, (22) 3353-3363.Informa Uk Limited.

Solvation of Na in the Sodide Solution, LiNa10MeNH2.

Seel AG, Holzmann N, Imberti S, Bernasconi L, Edwards PP, Cullen PL, Howard CA and Skipper NT. *The Journal of Physical Chemistry B* vol. 123, (25) 5337-5342.American Chemical Society (Acs).

Production of phosphorene nanoribbons.

Watts MC, Picco L, Russell-Pavier FS, Cullen PL, Miller TS, Bartu SP, Payton OD, Skipper NT, Tileli V and Howard CA. *Nature* vol. 568, (7751) 216-220.Nature Research.

2018

The structures of liquid pyridine and naphthalene: The effects of heteroatoms and core size on aromatic interactions.

Headen TF, Cullen PL, Patel R, Taylor A and Skipper NT. *Physical Chemistry Chemical Physics* vol. 20, (4) 2704-2715.

2017

Single Crystal, Luminescent Carbon Nitride Nanosheets Formed by Spontaneous Dissolution.

Miller TS, Suter TM, Telford AM, Picco L, Payton OD, Russell-Pavier F, Cullen PL, Sella A, Shaffer MSP, Nelson J, Tileli V, McMillan PF and Howard CA. *Nano Letters* vol. 17, (10) 5891-5896.

Trajectory of the selective dissolution of charged single-walled carbon nanotubes.

Buckley DJ, Hodge SA, Marco MD, Hu S, Anthony DB, Cullen PL, McKeigue K, Skipper NT, Shaffer MSP and Howard CA. *Journal of Physical Chemistry C* vol. 121, (39) 21703-21712.

Investigation of Hot Pressed Polymer Electrolyte Fuel Cell Assemblies via X-ray Computed Tomography.

Meyer Q, Mansor N, Iacoviello F, Cullen PL, Jervis R, Finegan D, Tan C, Bailey J, Shearing PR and Brett DJL. *Electrochimica Acta* vol. 242, 125-136.Elsevier Bv.

Ionic solutions of two-dimensional materials.

Cullen PL, Cox KM, Bin Subhan MK, Picco L, Payton OD, Buckley DJ, Miller TS, Hodge SA, Skipper NT, Tileli V and Howard CA. *Nature Chemistry* vol. 9, (3) 244-249.

2014

Probing the charging mechanisms of carbon nanomaterial polyelectrolytes.

Hodge SA, Tay HH, Anthony DB, Menzel R, Buckley DJ, Cullen PL, Skipper NT, Howard CA and Shaffer MSP. *Faraday Discussions* vol. 172, 311-325.Royal Society of Chemistry (Rsc).

2013

Multielement NMR Studies of the Liquid-Liquid Phase Separation and the Metal-to-Nonmetal Transition in Fluid Lithium and Sodium Ammonia Solutions.

Lodge MTJH, Cullen P, Rees NH, Spencer N, Maeda K, Harmer JR, Jones MO and Edwards PP. *The Journal of Physical Chemistry B* vol. 117, (42) 13322-13334. American Chemical Society (Acs).

2012

Structure and Morphology of Charged Graphene Platelets in Solution by Small-Angle Neutron Scattering.

Milner EM, Skipper NT, Howard CA, Shaffer MSP, Buckley DJ, Rahnejat KA, Cullen PL, Heenan RK, Lindner P and Schweins R. *Journal of The American Chemical Society* vol. 134, (20) 8302-8305. American Chemical Society (Acs).