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### 2025

**Intermediate-range solvent templating and counterion behaviour at charged carbon nanotube surfaces.**

. *Nature Nanotechnology* vol. 20, (5) 639-645. Springer Nature.

**Hydrogen Induced Phase Transition in TiZrNbHfV<sub>1-x</sub>Ta<sub>x</sub> High Entropy Alloys.**

. *The Journal of Physical Chemistry C* vol. 129, (6) 2904-2912. American Chemical Society (Acs).

**Visible lithiation gradients of bulk MoS<sub>2</sub> in lithium-ion coin cells.**

. *Journal of Materials Chemistry A* vol. 13, (32) 26389-26400. Royal Society of Chemistry (Rsc).

### 2024

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

. *Physical Chemistry Chemical Physics* vol. 26, (38) 25021-25028. Royal Society of Chemistry (Rsc).

**Investigating the effect of FeN<sub>5</sub> configuration in the oxygen reduction reaction using N-heterocycle functionalized carbon nanotubes.**

. *Journal of Materials Chemistry A* vol. 12, (41) 28074-28084. Royal Society of Chemistry (Rsc).

### 2023

**2023 roadmap for potassium-ion batteries.**

. *Journal of Physics Energy* vol. 5, (2). IOP Publishing.

**Ex Situ Characterization of 1T/2H MoS<sub>2</sub> and Their Carbon Composites for Energy Applications, a Review.**

. *Acs Nano* vol. 17, (6) 5163-5186. American Chemical Society (Acs).

### 2022

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

. *Current Opinion in Electrochemistry* vol. 31. Elsevier.

### 2021

**Neutron studies of Na-ion battery materials.**

. *Jphys Materials* vol. 4, (4).

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

. *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.**

. *Nanoscale*.

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

. *Electrochimica Acta* vol. 352,.

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

. *Carbon* vol. 157, 847-856.Elsevier.

## 2019

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

. *Molecular Physics* vol. 117, (22) 3353-3363.Informa Uk Limited.

**Solvation of Na in the Sodide Solution, LiNa<sub>10</sub>MeNH<sub>2</sub>.**

. *The Journal of Physical Chemistry B* vol. 123, (25) 5337-5342.American Chemical Society (Acs).

**Production of phosphorene nanoribbons.**

. *Nature* vol. 568, (7751) 216-220.Springer Nature.

## 2018

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

. *Physical Chemistry Chemical Physics* vol. 20, (4) 2704-2715.

## 2017

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

. *Nano Letters* vol. 17, (10) 5891-5896.

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

. *Journal of Physical Chemistry C* vol. 121, (39) 21703-21712.

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

. *Electrochimica Acta* vol. 242, 125-136.Elsevier Bv.

## 2016

**Ionic solutions of two-dimensional materials.**

. *Nature Chemistry* vol. 9, (3) 244-249.Springer Nature.

## 2014

**Probing the charging mechanisms of carbon nanomaterial polyelectrolytes.**

. *Faraday Discussions* vol. 172, 311-325.Royal Society of Chemistry (Rsc).

## 2013

**Multielement NMR Studies of the LiquidLiquid Phase Separation and the Metal-to-Nonmetal Transition in Fluid Lithium and SodiumAmmonia Solutions.**

. *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.**

. *Journal of The American Chemical Society* vol. 134, (20) 8302-8305.American Chemical Society (Acs).