

Environmental Science Nano

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Cover

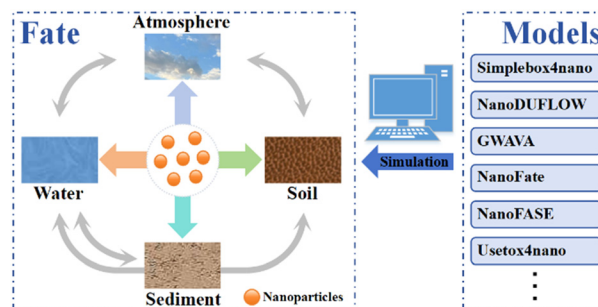
See Ying Wang *et al.*, pp. 3394–3412.
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CRITICAL REVIEWS

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Fate models of nanoparticles in the environment: a critical review and prospects

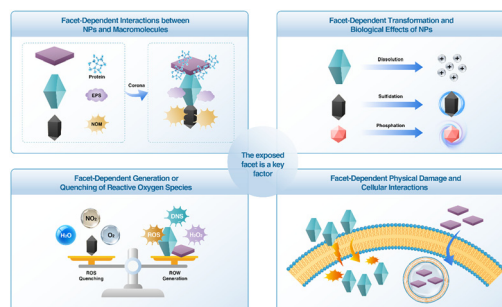
Ruiyu Zhang, Xiaoxin Zheng, Wenhong Fan, Xiangrui Wang, Tianhui Zhao, Xiaoli Zhao, Willie J. G. M. Peijnenburg, Martina G. Vijver and Ying Wang*



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Mechanisms for facet-dependent biological effects and environmental risks of engineered nanoparticles: a review

Jie Tang, Jinghua Hao, Xianwei Wang,* Lili Niu, Nali Zhu, Zhigang Li, Lingxiangyu Li,* Yawei Wang and Guibin Jiang



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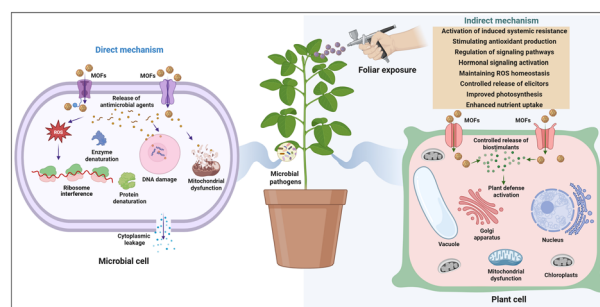


CRITICAL REVIEWS

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Metal–organic frameworks as versatile platforms for sustainable crop disease management: a comprehensive review of mechanisms and applications

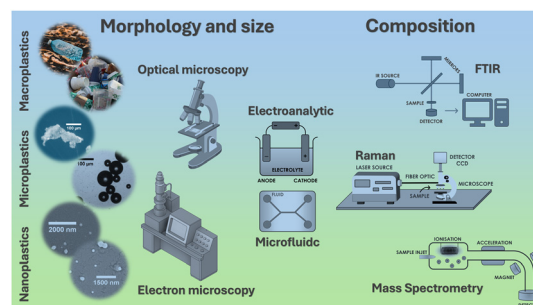
Hafiza Ayesha Masood, Temoor Ahmed, Muhammad Khubaib Zahid, Muhammad Noman, Muhammad Arslan Yousaf, Hayssam M. Ali, Bin Li* and Shaojie Han*



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Micro- and nanoplastics in the environment: a comprehensive review on detection techniques

Fabricio A. Santos,* Rafaela S. Andre, Augusto D. Alvarenga, Ana Laura M. M. Alves and Daniel S. Correa*

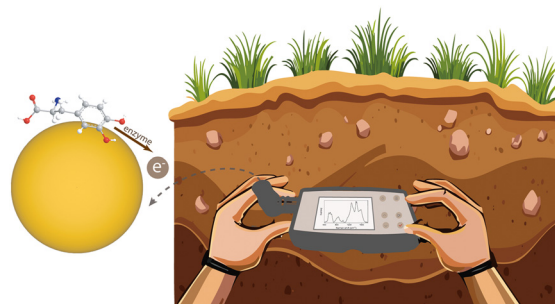


COMMUNICATION

3468

Field-deployable measurement of soil extracellular enzyme activity using surface-enhanced Raman spectroscopy

Hanwei Wang, Lahiru Gamage, Jianwei Li* and Haoran Wei*

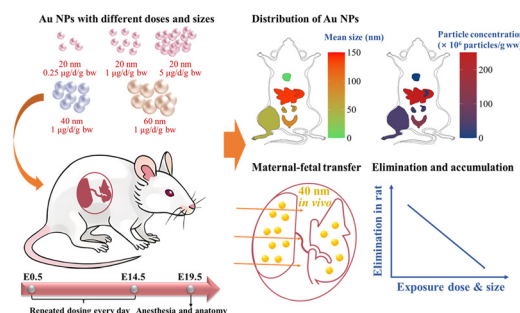


PAPERS

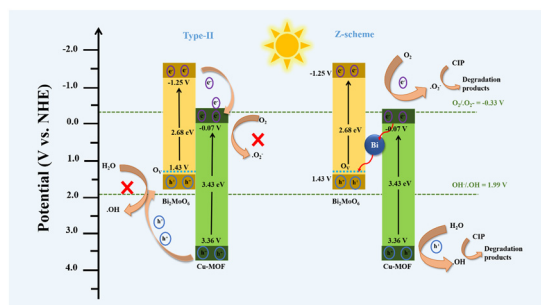
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The accumulation and tissue distribution of gold nanoparticles in exposed pregnant rats

Yao Li, Zhaomin Dong,* Xiangrui Wang, Ying Wang and Wenhong Fan*



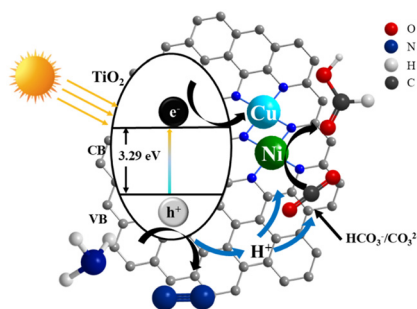
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Construction of Cu-MOF@Bi₂MoO₆ Z-scheme heterostructure mediated by Bi nanoparticles and oxygen vacancies for ciprofloxacin degradation and mechanism investigation

Ranjith Kumar Dharman, Angappan Kausalya, Stella Vargheese, Senthilkumar Lakshmipathi and Tae Hwan Oh*

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MOF-derived Ni-Cu bimetallic interface synergy modified TiO₂ for efficient photocatalytic conversion of CO₂ to formate in ammonia nitrogen wastewater

Junjie Yang, Jun Xie, Junxian Qin, Jin Shang, Hiromi Yamashita, Daiqi Ye and Yun Hu*

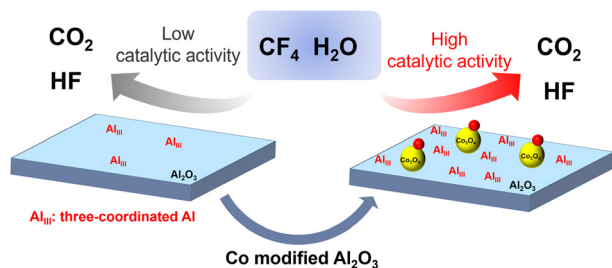
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Efficient peroxydisulfate activation by a CoNiFc-MOF for rapid removal of emerging contaminants via both radical and non-radical pathways

Maierhaba Kuerban, Yun Wang, Dilnur Dilxat, Nuzahat Habibul* and Yanyun Hu*

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Enhancing the proportion of three-coordinated Al active sites on Co/Al₂O₃ for efficient CF₄ decomposition

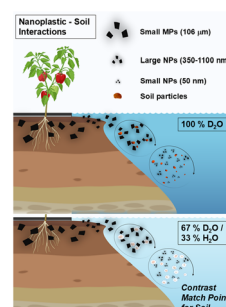
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Particle dynamics of nanoplastics suspended in water with soil microparticles: insights from small angle neutron scattering (SANS) and ultra-SANS

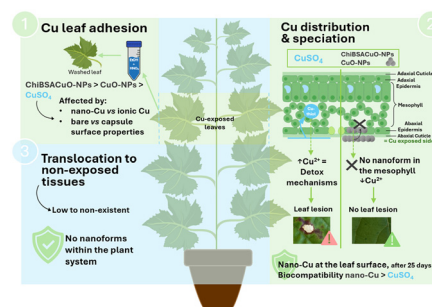
Anton Astner, Sai Venkatesh Pingali, Hugh O'Neill, Barbara Evans, Volker Urban, Kenneth Littrell and Douglas Hayes*



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Elucidating nano-Cu interactions in grapevine leaves: formulation-dependent foliar affinity, uptake, and leaf persistence over time

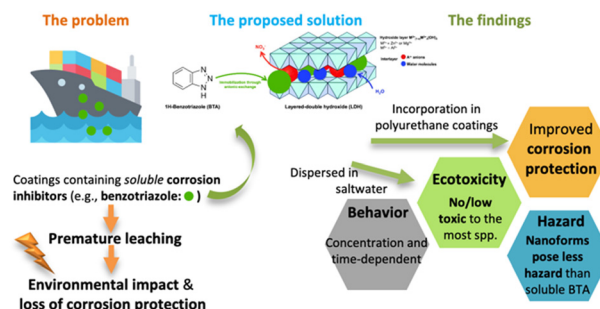
Diana Salvador, Matheus Miranda, Sandra Rodrigues, Hiram Castillo-Michel, Cátia Fidalgo, Artur Alves, Mickael Wagner, Camille Larue, Sónia M. Rodrigues and Astrid Avellan*



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Environmental behavior, hazard and anti-corrosion performance of benzotriazole-based nanomaterials for sustainable maritime applications

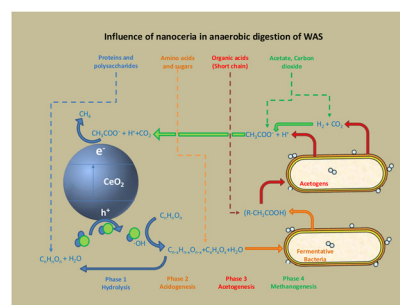
Joana Figueiredo, Fernando Perina, Diana Carneiro, Muhammad Ahsan Iqbal, Tânia Oliveira, Cláudia Rocha, Frederico Maia, João Tedim and Roberto Martins*



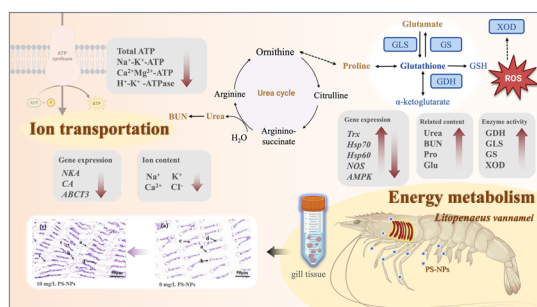
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Unraveling the effects of cerium oxide nanoparticles on the metabolism of anaerobic digestion of waste activated sludge

Pabel Cervantes-Avilés,* Weiwei Li and Arturo A. Keller



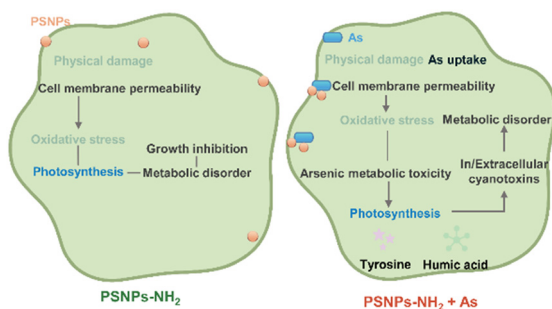
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Ion transport and metabolic regulation induced by nanoplastic toxicity in gill of *Litopenaeus vannamei* using proteomics

Yiming Li, Yucong Ye, Xiaoyi Zhu, Zongli Yao, Yan Li, Zhen Sun, Na Rihan, Yunlong Zhao* and Qifang Lai*

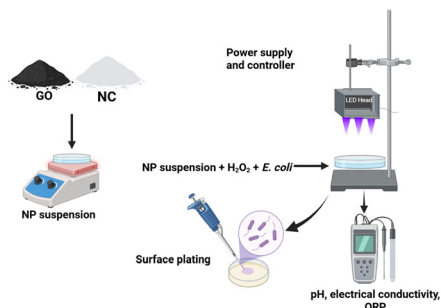
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Toxic effects and metabolic response mechanisms of amino-modified polystyrene nanoplastics and arsenic on *Microcystis aeruginosa*

Xinwei Shi, Qi Wang, Weitao Liu,* Ruiying Shi, Yichen Ge and Jinzheng Liu

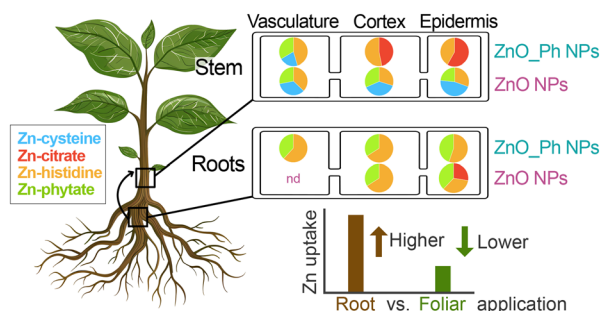
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Antibacterial efficacy of light-activated graphene oxide nanoparticles and nanochitosan in water

Rahul Chetry, Adityasukumar Pasagadi, Muhammad Zubair, Aman Ullah and M. S. Roopesh*

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Zn₃(PO₄)₂ shell effects on Zn uptake and cellular distribution of root applied ZnO NPs

Sandra Rodrigues,* Astrid Avellan, Hiram Castillo-Michel, Matheus C. R. Miranda, Diana Salvador, Aude Calas, Gregory V. Lowry and Sónia M. Rodrigues



Multi-omics analyses reveal the mechanisms of developmental toxicity of a covalent organic framework to the roots of rice (*Oryza sativa*) seedlings

The diagram illustrates a multi-omics approach to plant stress analysis. It features a central circular flow with three segments: **Transcriptomics** (blue), **Metabolomics** (yellow), and **Enzyme activities** (green). The **Transcriptomics** segment includes **RNA-seq** and **EB-COFs**. The **Metabolomics** segment includes **UPLC**. The **Enzyme activities** segment lists **GST**, **SOD**, **CAT**, **PPO**, **POD**, and **APX**. A central orange arrow labeled **Multiplex Analysis** points from this circular flow to a large green plant. To the left of the plant, a small inset shows a plant in a pot with a magnifying glass over its leaves. To the right of the plant, several pink ovals represent downstream processes: **Phenylpropanoid biosynthesis**, **Oxidative stress**, **Plant hormone signal transduction**, **MAPK signaling pathway**, and **Glutathione metabolism**. A small inset at the bottom left shows a plant with a magnifying glass over its leaves, and a small inset at the bottom right shows a DNA double helix.

Graphene oxide composited with nano-Fe₃O₄ for enhancing root reducibility in ryegrass (*Lolium perenne* L.)

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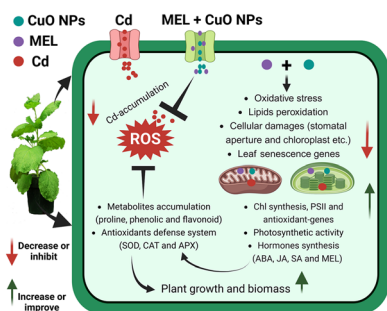
Nanoscale hydroxyapatite-coated Cu-based nanopesticides exhibited promising benefits: enhanced application efficiency and plant element homeostasis

Figure 1 displays six panels (A-F) showing fluorescence microscopy images of the Drosophila embryo. The images are arranged in a 2x3 grid. Panels A, B, and C are in the top row, while D, E, and F are in the bottom row. Each panel shows a different marker expression pattern. Panel A shows a white, elongated structure. Panel B shows a green, elongated structure. Panel C shows a yellow, elongated structure. Panel D shows a red, elongated structure. Panel E shows a purple, elongated structure. Panel F shows a cyan, elongated structure. Each panel includes a scale bar indicating 10 μm.

The sulphidation of ZnO nanoparticles enhances zinc recovery in Zn-starved barley (*Hordeum vulgare* L.): the interplay of metal acquisition and cellular homeostasis

The diagram illustrates the Zn uptake and accumulation pathway in rice. It shows the uptake of Zn from the soil as ZnSO₄, its transport to the shoot as sulphur-nZnO, and its accumulation in the shoot. The diagram also shows the gene expression profile for Zn uptake and accumulation, including ZIP10, ZIP8, ZIP3, and MTP1, and the resulting Zn accumulation in the shoot. A circular inset shows a rice plant with a Zn uptake pathway diagram.

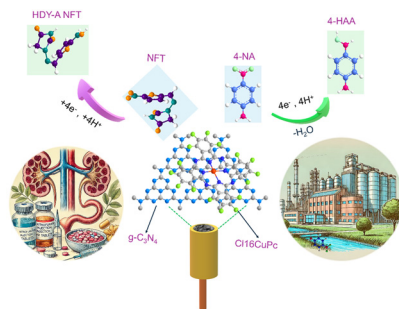
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Melatonin and nanocopper synergistically regulate cadmium toxicity in *Brassica napus*: evidences from photosynthesis phenomics, oxidative metabolism, and multiple defense responses

Zohaib Kaleem, Hafsa Shahbaz, Sharafat Ali, Anmol Albert, Di He, Rana Muhammad Amir Gulzar, Muhammad Asad Ullah Asad, Weijun Zhou, Kangni Zhang* and Zaid Ulhassan*

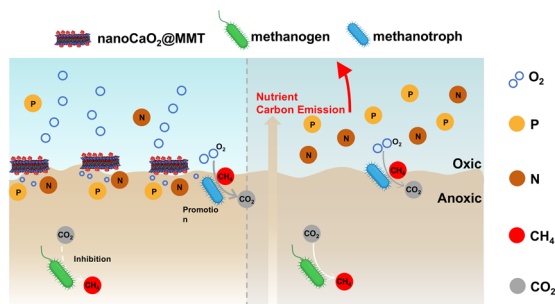
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Substitution-functionalized copper phthalocyanine (CuPc)/carbon nitride (g-C₃N₄) electrocatalysts for the simultaneous detection of 4-nitroaniline and nitrofurantoin

Nandini Nataraj, Dhayanantha Prabu Jaihindh, Shen-Ming Chen,* Amr Sabbah, Saravanakumar Muthusamy, Sumangala Devi, Yi-Feng Lin and Agalya Mahalingam

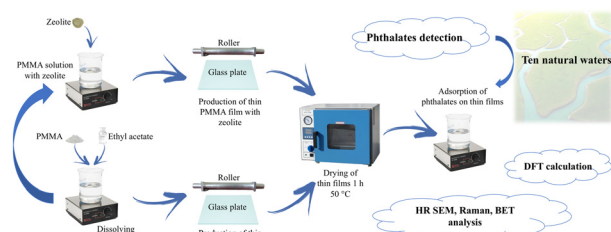
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Montmorillonite loaded with nano calcium peroxide as an effective material to mitigate methane emission in shallow lakes

Shiming Fan, Tong Li, Xuexin Han, Yu Gu, Biao Li* and Qinglong L. Wu*

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Eco-friendly zeolite/PMMA thin films for efficient phthalate removal from natural waters: a computational and experimental study

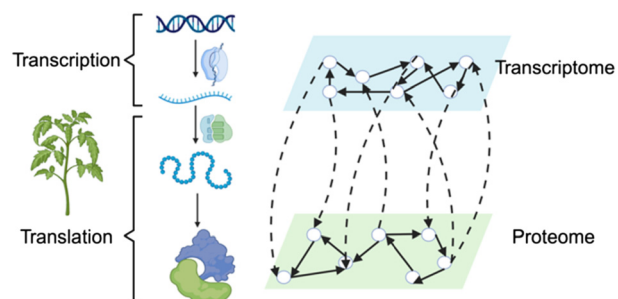
Milinko Perić, Andriana Bilić, Brankica Kartalović, Boris Brkić, Maja Šćepanović, Mirjana Grujić-Brojčin, Branislava Srđenović-Čonić, Nebojša Kladar, Stevan Armaković, Maria M. Savanović and Sanja J. Armaković*



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Integration of transcriptomics and proteomics data for understanding the mechanisms of positive effects of carbon-based nanomaterials on plant tolerance to salt stress

Sajedeh Rezaei Cherati and Mariya V. Khodakovskaya*



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Nano-biochar supported Zn delivery in plants to enhance seedling growth and ROS management in rice

Poonam Sashidhar, Kalyan Yakkala, Rupam Kumar Bhunia, Suparna Patowary, Mandira Kochar, Shovon Mandal, Lambert Brau, David Cahill and Mukul Dubey*

