

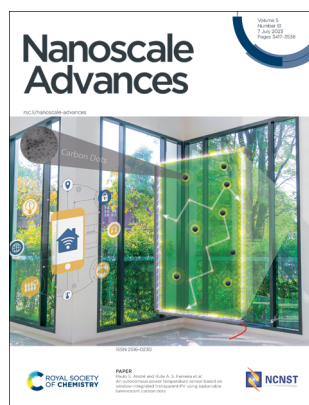
# Nanoscale Advances

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See Paulo S. André and Rute A. S. Ferreira *et al.*, pp. 3428–3438. Image reproduced by permission of Dr Rute Ferreira from *Nanoscale Adv.*, 2023, 5, 3428.



### Inside cover

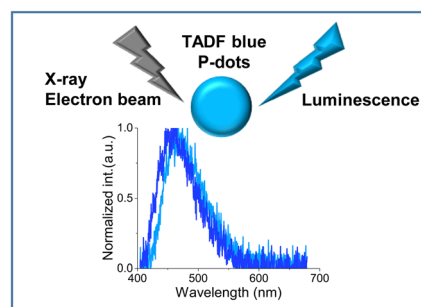
See Guillem Pratx, Mamoru Fujitsuka, Yasuko Osakada *et al.*, pp. 3424–3427. Image reproduced by permission of Dr Yasuko Osakada from *Nanoscale Adv.*, 2023, 5, 3424.

## COMMUNICATION

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### Radioluminescence from polymer dots based on thermally activated delayed fluorescence

Daiki Asanuma, Hieu Thi Minh Nguyen, Zuoyue Liu, Sachiko Tojo, Hajime Shigemitsu, Minoru Yamaji, Kiyohiko Kawai, Tadashi Mori, Toshiyuki Kida, Guillem Pratx,\* Mamoru Fujitsuka\* and Yasuko Osakada\*

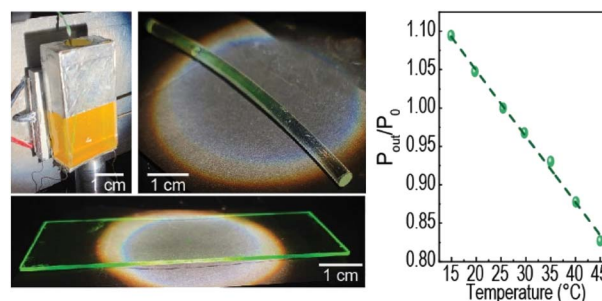


## PAPERS

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### An autonomous power temperature sensor based on window-integrated transparent PV using sustainable luminescent carbon dots

Sandra F. H. Correia,\* Lianshe Fu, Lilia M. S. Dias, Rui F. P. Pereira, V. de Zea Bermudez, Paulo S. André and Rute A. S. Ferreira\*



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# Optimization and characterization of miRNA-129-5p-encapsulated poly (lactic-co-glycolic acid) nanoparticles to reprogram activated microglia

**INFLAMMATION - MEDIATED DISEASES**

The diagram illustrates the progression of inflammation-mediated diseases through three stages of cell activation and signaling:

- Stage 1: Initial Activation**
  - CYTOKINES:** HMGB
  - Receptors:** TLR, NOD, NKG2A
  - Signaling Pathways:** MyD88, IRAK4, IRAK1, TRAF6, IKK, I $\kappa$ B, NF- $\kappa$ B
- Stage 2: Intermediate Activation**
  - CYTOKINES:** HMGB, IL-1, IL-6, IL-18
  - Receptors:** TLR, NOD, NKG2A
  - Signaling Pathways:** MyD88, IRAK4, IRAK1, TRAF6, IKK, I $\kappa$ B, NF- $\kappa$ B
- Stage 3: Advanced Activation**
  - CYTOKINES:** HMGB, IL-1, IL-6, IL-18
  - Receptors:** TLR, NOD, NKG2A
  - Signaling Pathways:** MyD88, IRAK4, IRAK1, TRAF6, IKK, I $\kappa$ B, NF- $\kappa$ B

The diagram also shows a cell with receptors (TLR, NOD, NKG2A) and cytokines (HMGB, IL-1, IL-6, IL-18) in a state of **PRO-INFLAMMATORY STATE** (M1) and **PRO-RESOLVATIVE STATE** (M2).

Key components and pathways shown include:

- Receptors:** TLR, NOD, NKG2A
- Signaling Pathways:** MyD88, IRAK4, IRAK1, TRAF6, IKK, I $\kappa$ B, NF- $\kappa$ B
- Cytokines:** HMGB, IL-1, IL-6, IL-18
- Cell States:** M1 (Pro-inflammatory), M2 (Pro-resolutive)
- Cellular Components:** Mitochondria, Nucleus, Cytoplasm, Golgi, Lysosome, Peroxisome, Endoplasmic Reticulum, Vacuole, Phagosome

# Label-free detection of polystyrene nanoparticles in *Daphnia magna* using Raman confocal mapping

The diagram illustrates the experimental workflow for studying the uptake of PS NPs by *Daphnia magna*. The process begins with *Daphnia magna* and two types of PS NPs: COOH-PS NPs and NH<sub>2</sub>-PS NPs. After 4 h exposure, the organisms are processed into two paths:

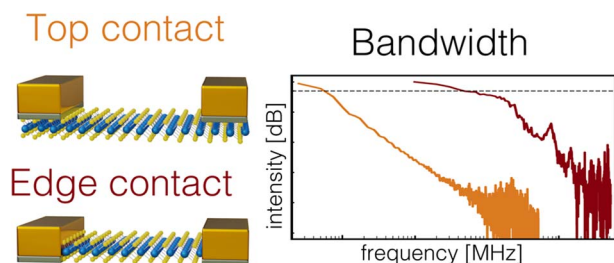
- Path 1:** Ultrathin sections on glass slide → TEM imaging. This path includes a representative TEM image.
- Path 2:** Embedding in low melting agarose → Raman confocal mapping. This path includes a representative Raman spectrum plot.

# Supramolecular Pd@methioine-EDTA-chitosan nanocomposite: an effective and recyclable bio-based and eco-friendly catalyst for the green Heck cross-coupling reaction under mild conditions

## Superior cyclability of high surface area vanadium nitride in salt electrolytes

The diagram illustrates a cathodic protection system. A power source (battery) is connected to a Cathode (VN) and an Anode (C). Electrons ( $e^-$ ) flow from the Anode to the Cathode. The Cathode is submerged in a solution containing  $Mg^{2+}$  ions, and the Anode is submerged in a solution containing  $SO_4^{2-}$  ions.

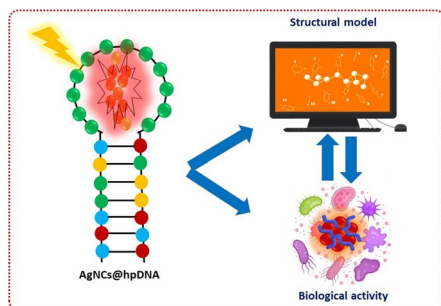
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### Edge contacts accelerate the response of MoS<sub>2</sub> photodetectors

Fabian Strauß, Christine Schedel and Marcus Scheele\*

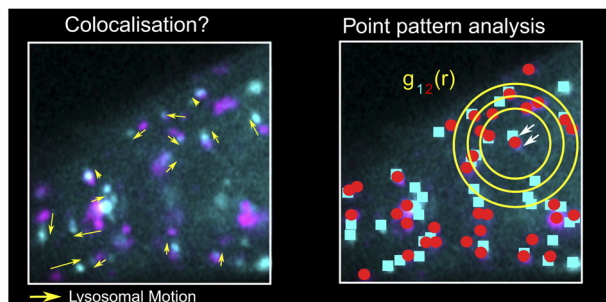
3500



### Optical, structural, and biological properties of silver nanoclusters formed within the loop of a C-12 hairpin sequence

Akhilesh Kumar Gupta, Nolan Marshall, Liam Yourston, Lewis Rolband, Damian Beasock, Leyla Danai, Elizabeth Skelly, Kirill A. Afonin and Alexey V. Krasnoslobodtsev\*

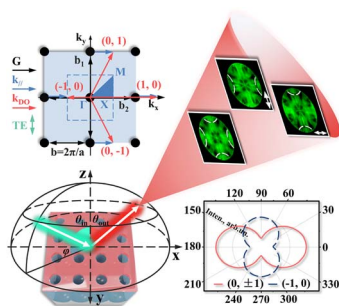
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### Identification of nanoparticles as vesicular cargo via Airy scanning fluorescence microscopy and spatial statistics

Christian Wimmenauer and Thomas Heinzel\*

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### Direction- and polarization-tunable spontaneous emission beneficial from diffraction orders of a square R6G-nanopore array

Shijia He, Yi Wang,\* Tianyu Wang, Dongda Wu, Junqiao La, Jiang Hu, Jiamin Xiao and Wenxin Wang\*



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## A tube-like Pd@coordination polymer with enhanced solar light harvesting for boosting photocatalytic H<sub>2</sub> production in a wide pH range and seawater

Jieling Li, Shihao Sun, Ningshuang Gao, Hua Li, Kun Liang,\* Jun Hai, Suisui He, Xijiao Mu\* and Baodui Wang\*

