

Electronic Supplementary Material (ESI) for Nanoscale.

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Electronic Supplementary Information

Phototatic micromotor based on platinum nanoparticle decorated carbon nitride

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Video S1. The Pt-g-C₃N₄ based micromotor exhibits positive phototaxis. Light is applied from the lower right direction. This video is in real time.

Video S2. The light controlled motion of the micromotor resulting in a 'S' shaped trajectory. Video speeded 5 times using VideoStudio software.

Video S3. The motion of the negative phototactic NH₂-Pt-g-C₃N₄ based micromotor. Light is applied from the right direction. The video plays at normal speed.

Video S4. The collective behaviour of the Pt-g-C₃N₄ based micromotors under tilted light irradiation (45°). The video plays at regular speed.

Video S5. The collective behaviour of the Pt-g-C₃N₄ based micromotors under vertical light irradiation. This video is in real time.

Video S6. The agitation of the sediment Pt-g-C₃N₄ based micromotors upon light irradiation. Video speeded 5 times using VideoStudio software.

Video S7. Agitation of the precipitated Pt-g-C₃N₄/Fe₃O₄ based micromotors in a quartz cuvette under the influence of light. Video speeded 5 times using VideoStudio software.

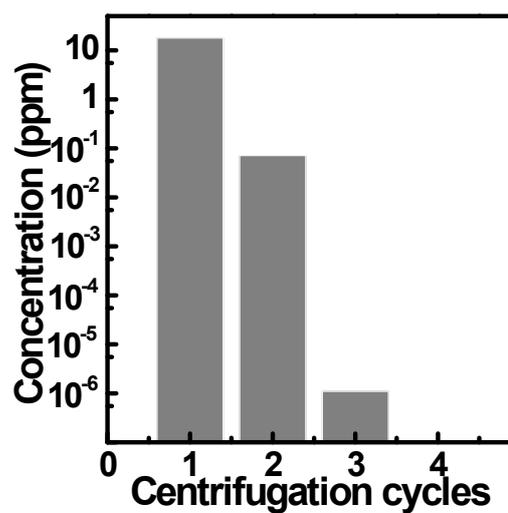


Fig. S1 The sodium ion concentration measured after each centrifugation cycle.

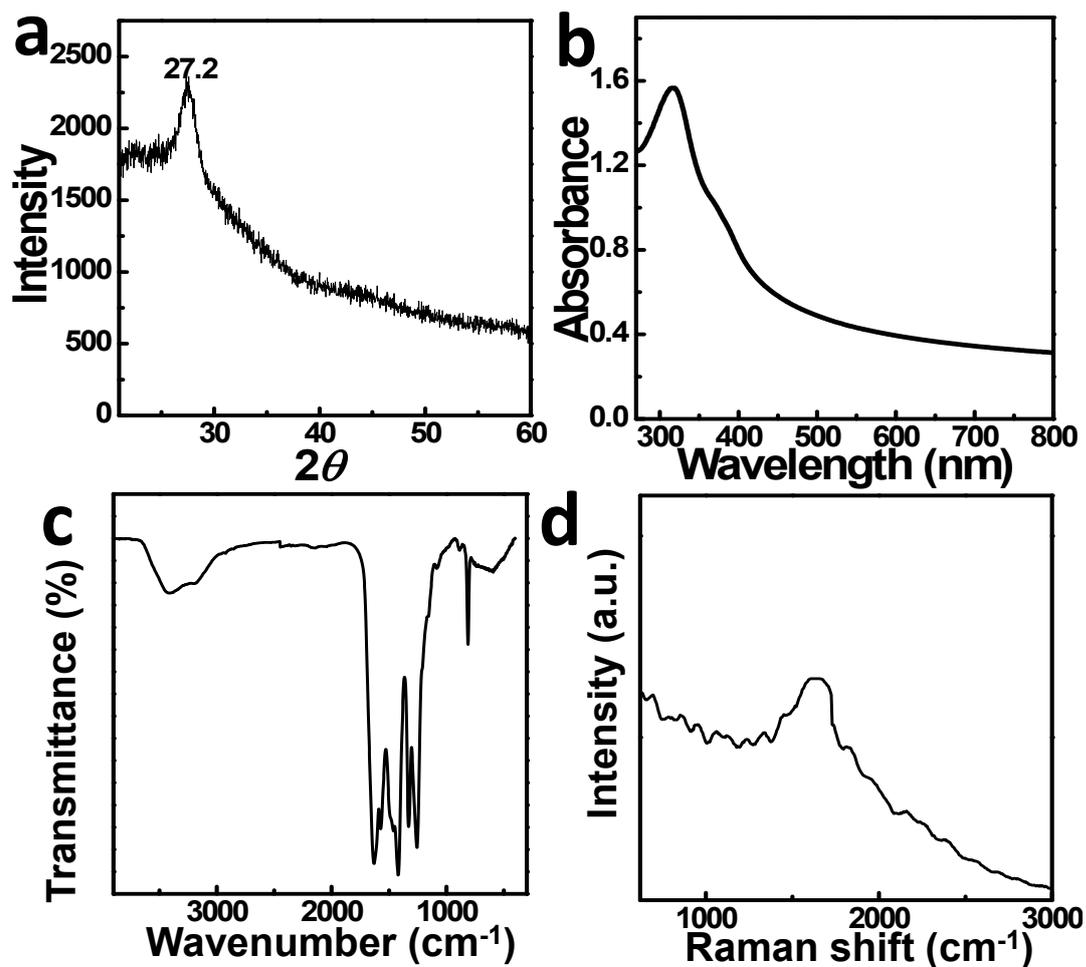


Fig. S2 (a) XRD, (b) UV-Vis, (c) FTIR and (d) Raman spectra of the g-C₃N₄ synthesized in the current study.

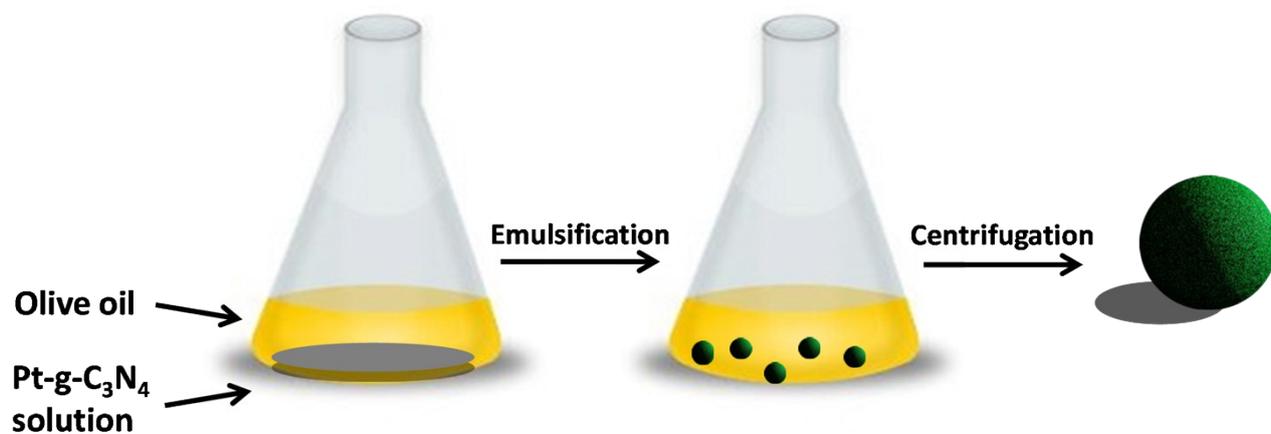


Fig. S3 Schematic showing the synthesis of the Pt-g-C₃N₄ based micromotor through the emulsion method.

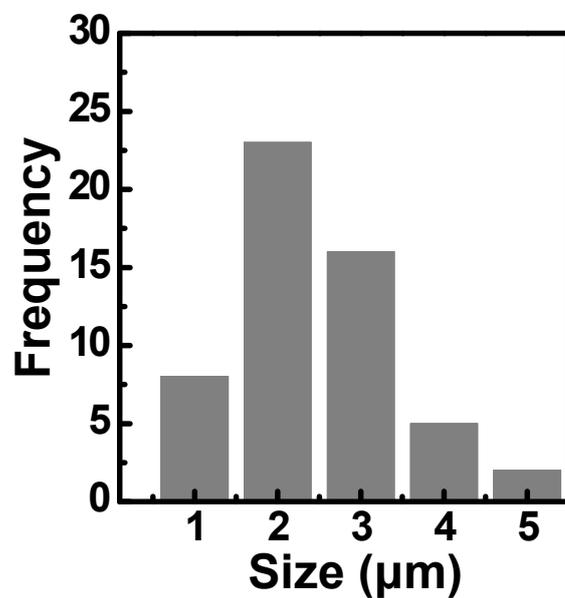


Fig. S4 Size distribution histogram of the Pt-g-C₃N₄ based micromotor.

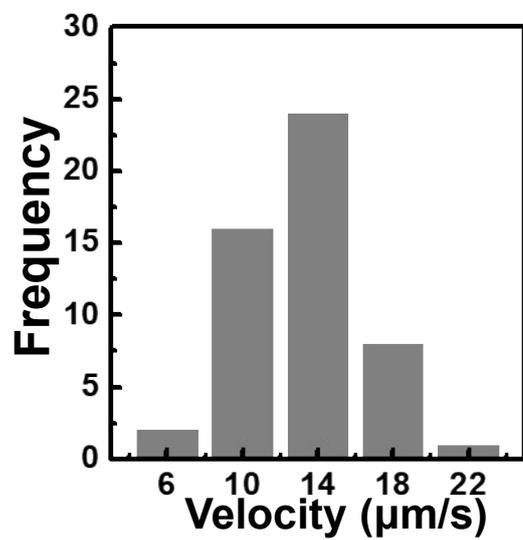


Fig. S5 Histogram of the velocity obtained from a number of Pt-g-C₃N₄ based micromotor.

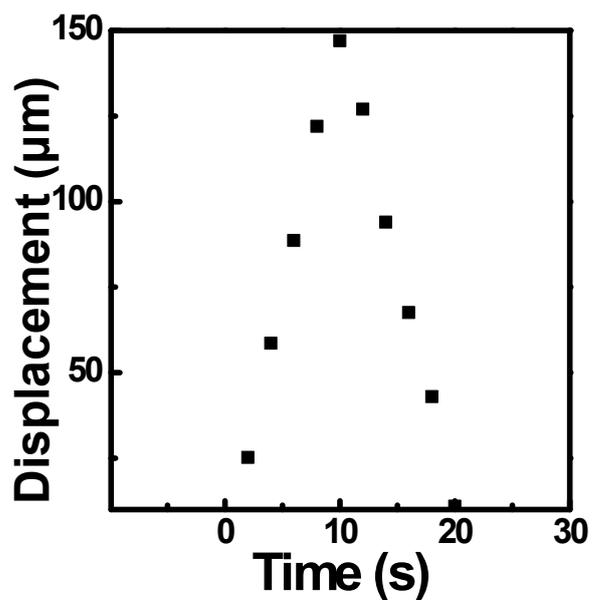


Fig. S6 Displacement of the Pt-g-C₃N₄ based micromotor relative to the original position at different time.

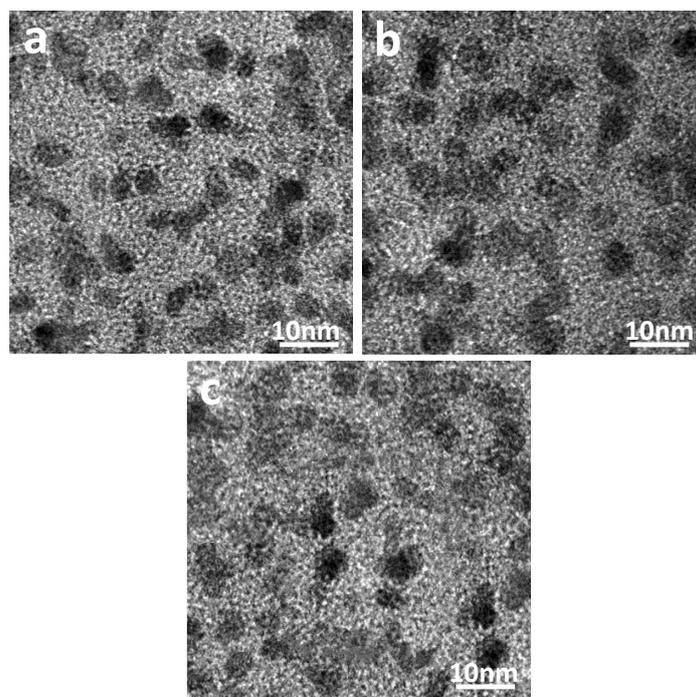


Fig. S7 TEM images showing (a) the pristine PtNPs and the PtNPs after the micromotor is irradiated by light for (b) 10 min and (c) 3 h. Note that the samples for (b,c) are prepared by dissolving the irradiated micromotors in methanol at 50 °C.

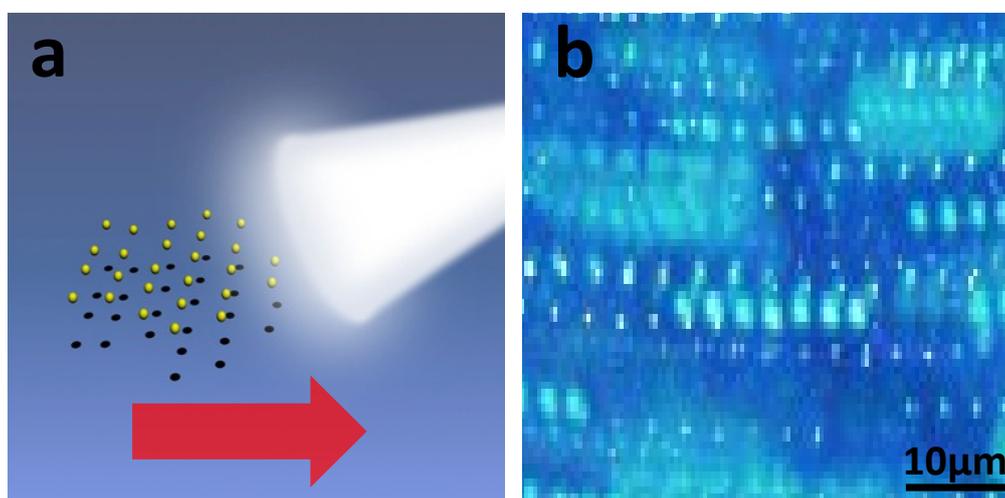


Fig. S8 (a) Schematic illustration and (b) the corresponding overlaid optical microscopic image showing the collective behavior of the Pt-g-C₃N₄ based micromotors under tilted light irradiation (45°).