

# Supporting Information

## Hierarchical Assembly of Atomically Precise Metal Clusters as a Luminescent Strain Sensor

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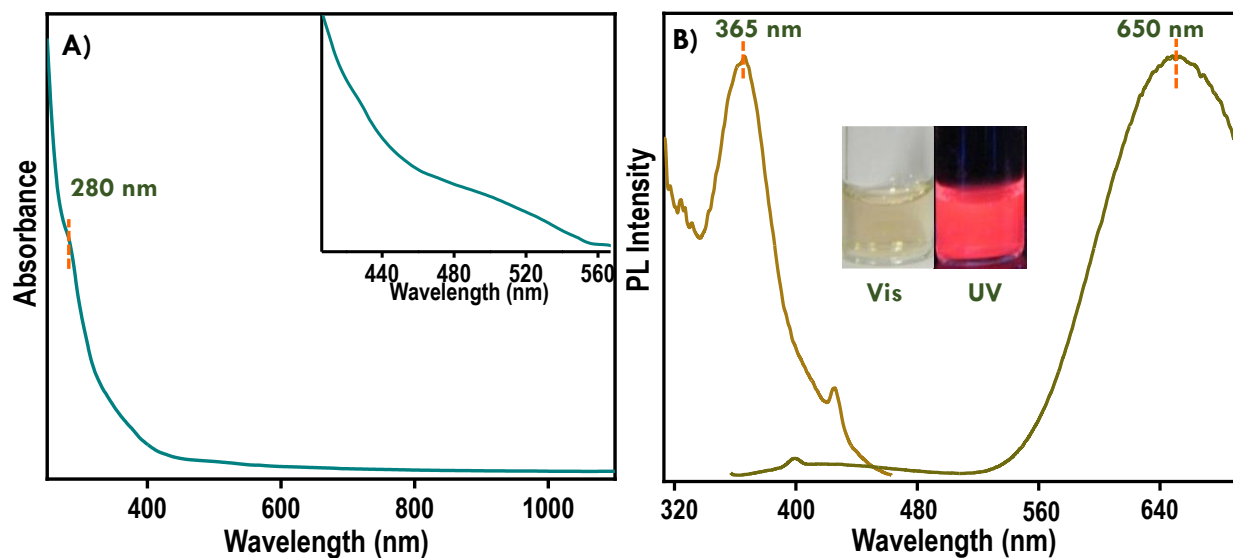
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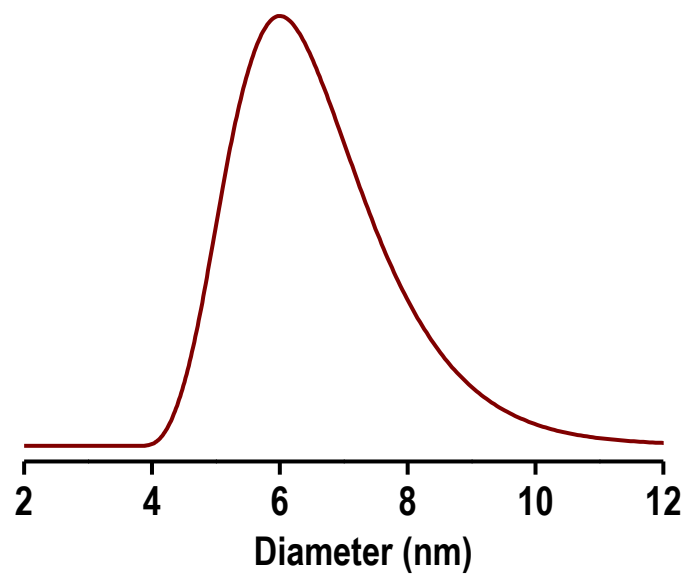
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## Table of Contents

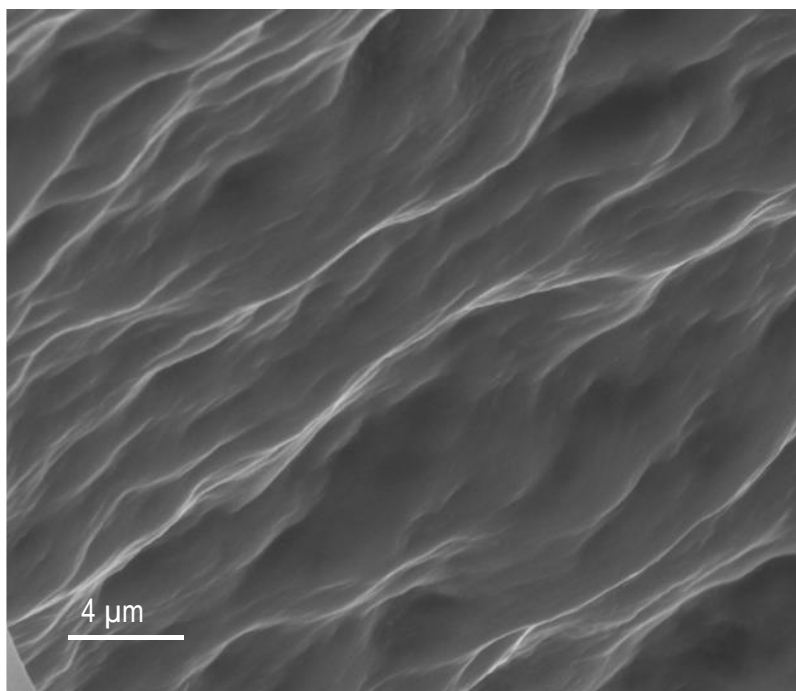
<b>Number</b>	<b>Description</b>	<b>Page Number</b>
<b>Figure S1</b>	UV-vis spectrum and emission spectrum of Au <sub>30</sub> @BSA	3
<b>Figure S2</b>	Particle size distribution of Au <sub>30</sub> @BSA clusters	4
<b>Figure S3</b>	FESEM image of the top surface of CCH	5
<b>Figure S4</b>	Powder XRD pattern of aminoclay	6
<b>Figure S5</b>	FESEM image of PVA added CCH	7
<b>Figure S6</b>	Stress-strain behavior of the dog bone sample	8
<b>Figure S7</b>	The luminescence spectra collected from the different positions of the dog bone and film sample before the tensile strength experiment	9
<b>Figure S8</b>	Image of electrospun CCH under UV light	10



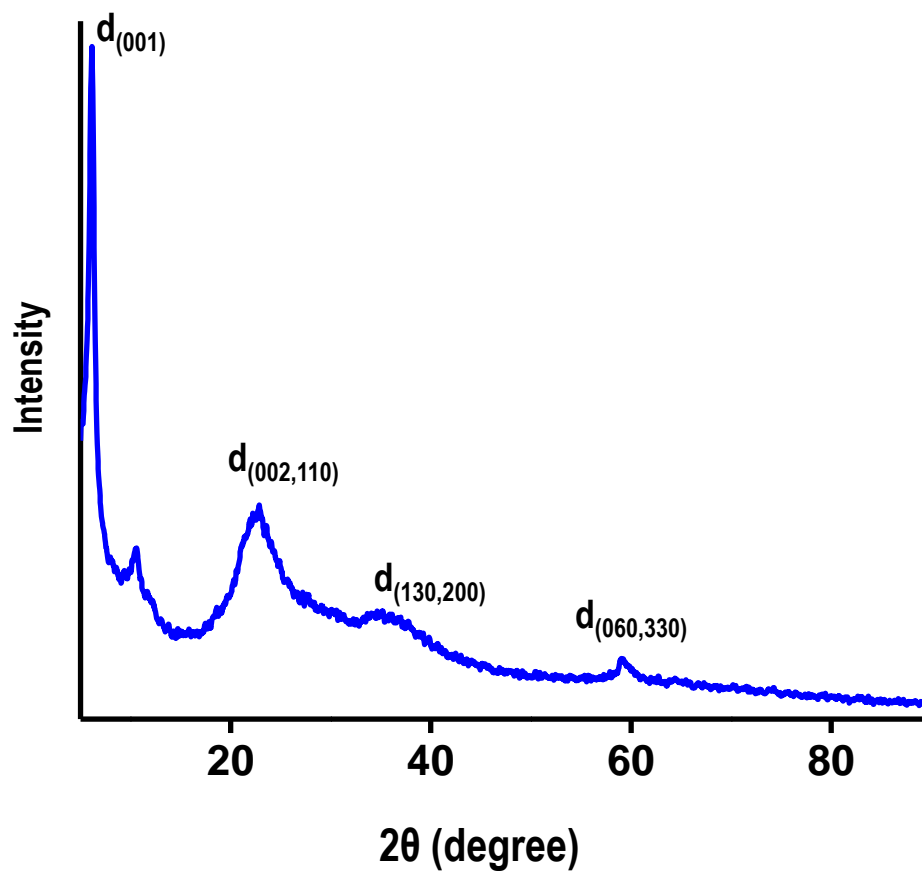
**Figure S1.** A) UV-vis spectrum of Au<sub>30</sub>@BSA showing a peak around 280 nm and a broad peak from 450 to 550 nm (shown in the inset). B) Excitation and emission spectrum of Au<sub>30</sub>@BSA. Emission spectrum shows the maxima at 650 nm for excitation at 365 nm. Inset shows the light brown color of the cluster solution under visible light and bright red color under UV light.



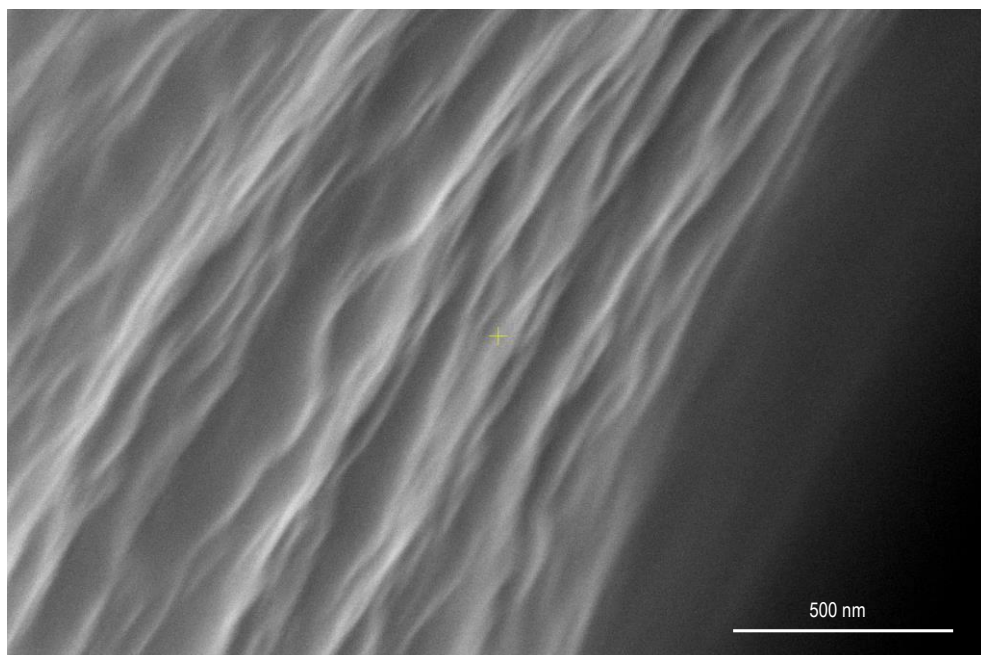
**Figure S2.** Particle size distribution of Au<sub>30</sub>@BSA showing the cluster size to be 6 nm.



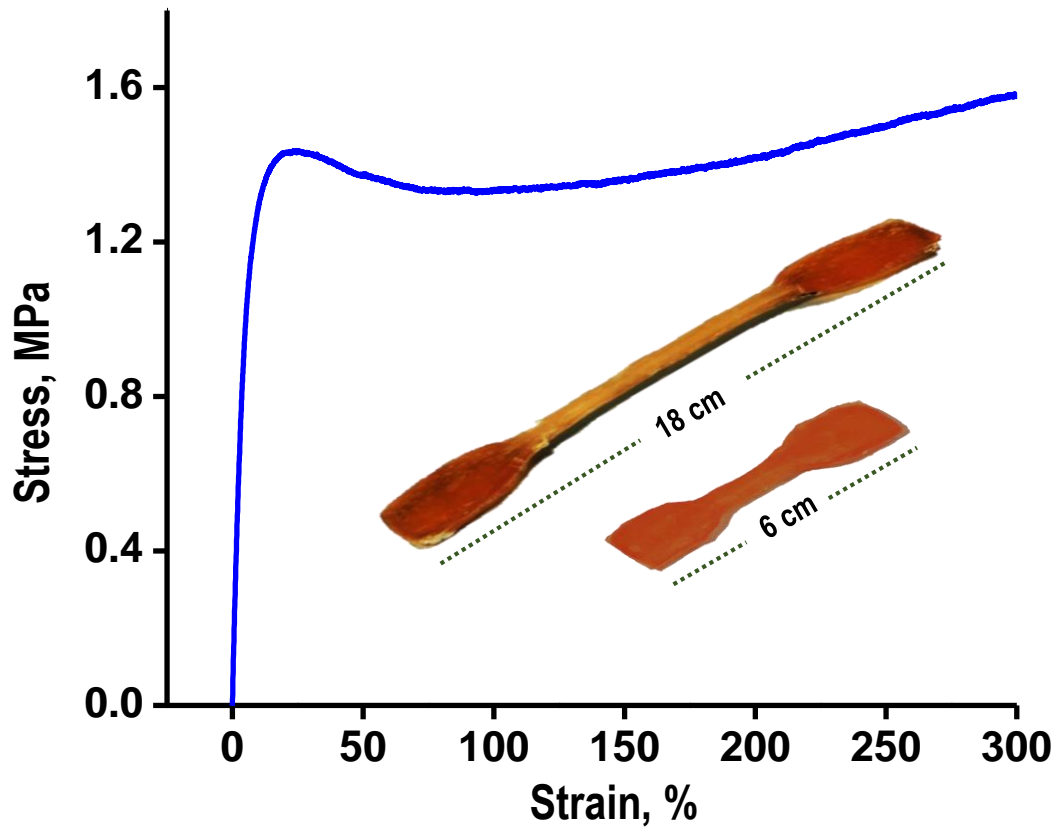
**Figure S3.** FESEM image shows the roughness of the surface of CCH.



**Figure S4.** Powder XRD pattern of aminoclay shows several peaks corresponding to different crystallographic planes of the clay.

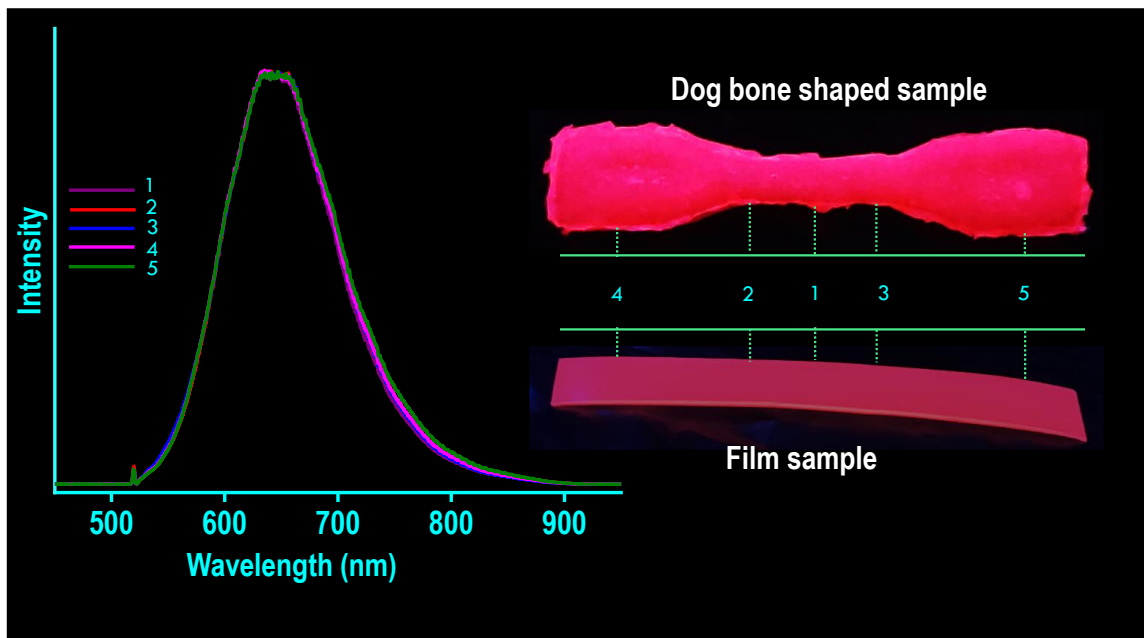


**Figure S5.** FESEM image of PVA added CCH showing the layered structure.

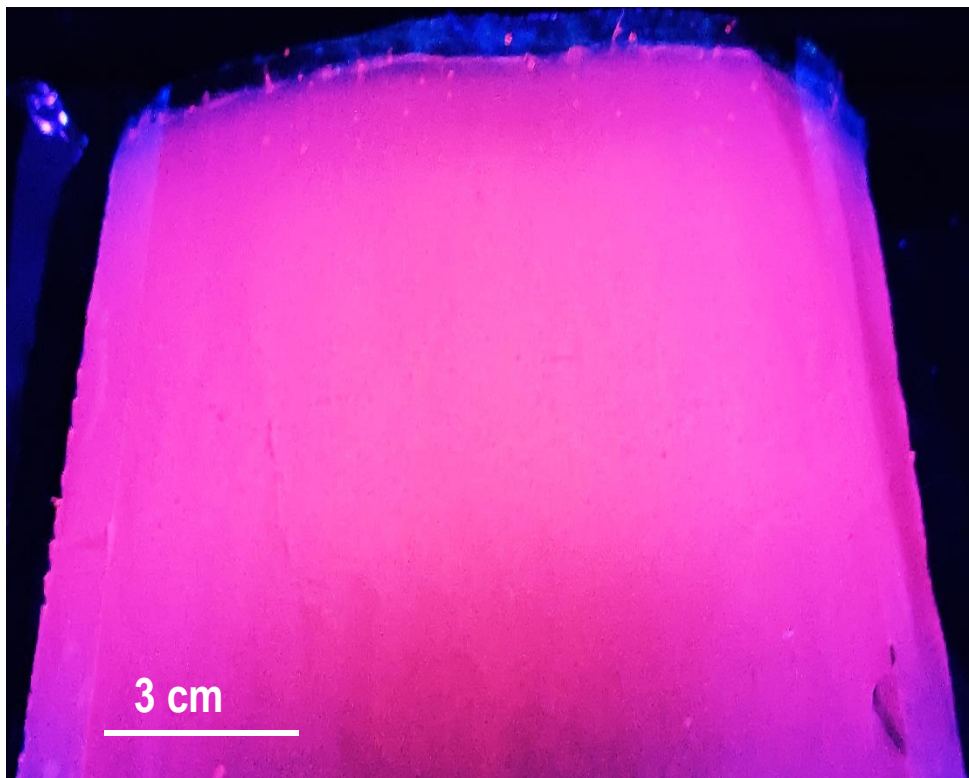


**Figure S6.** Stress-strain behavior of the dog bone sample showing high ductility of the material.





**Figure S7.** The luminescence spectrum collected from different positions (1, 2, 3, 4, and 5) of the dog bone and film samples before the tensile strength experiment. Inset shows the actual red luminescent dog bone and film samples used for experiment, different positions are marked.



**Figure S8.** Image of electrospun CCH under UV light showing bright red luminescence.