## **Supplementary Information**

## Biodegradable protein stabilized inorganic nanoassemblies for photothermal radiotherapy of hepatoma cells

Pranjali Yadav<sup>1</sup>, Shubhra Chaturvedi<sup>2</sup>, Samir Kumar Biswas<sup>3</sup>, Rohit Srivastava<sup>4</sup>, Kamalakannan Kailasam<sup>1\*</sup>, Anil Kumar Mishra<sup>2\*</sup>, Asifkhan Shanavas<sup>1\*</sup>

<sup>1</sup>Institute of Nano Science and Technology (INST), Phase 10, SAS Nagar, Mohali -160062, India

<sup>2</sup>Division of Cyclotron and Radiopharmaceutical Sciences, Institute of Nuclear Medicine and Allied Sciences, DRDO, Delhi, India

<sup>3</sup>Department of Physical Sciences, Indian Institute of Science Education & Research Mohali, Knowledge city, Sector 81, SAS Nagar, Manauli-140306, India.

<sup>4</sup>Department of Biosciences & Bioengineering, Indian Institute of Technology Bombay, Powai, Mumbai, Maharashtra 400076

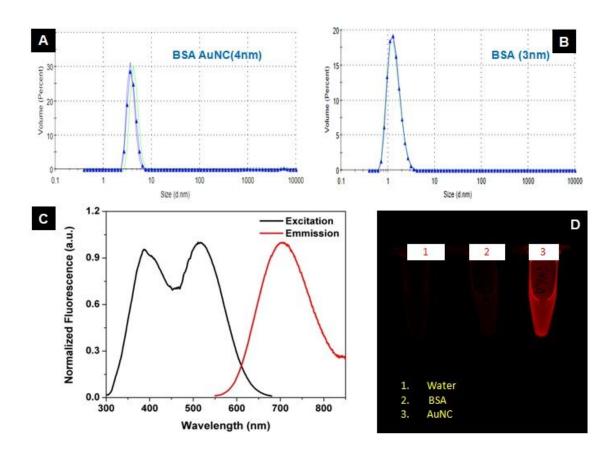


Figure S1: Dynamic Light Scattering (DLS) showing size distribution of (A) AuNC and (B) BSA; (C) Excitation and emission spectra of AuNC (D) Fluorescent images of water, BSA and AuNC

Table 1: Optimization of different concentration of AuNC incubated with Prot-ION

S. No.	IOC (Vol. in mL)	AuNC (Vol. in mL)	Double distilled water (Vol. in mL)
1	1	0.5	3.5
2	1	1	3
3	1	2	2
4	1	3	1

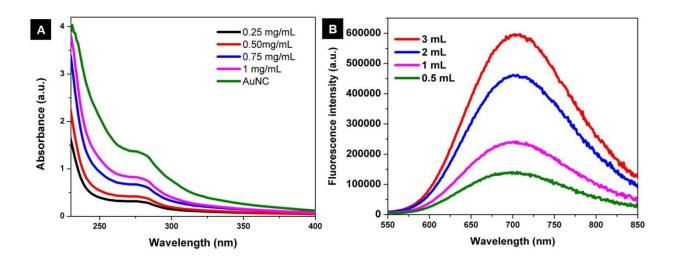


Figure S2: (A) UV-Visible spectra and (B) Fluorescent emission spectra of pellets of different concentration of AuNC incubated with IOC redispersed in water.

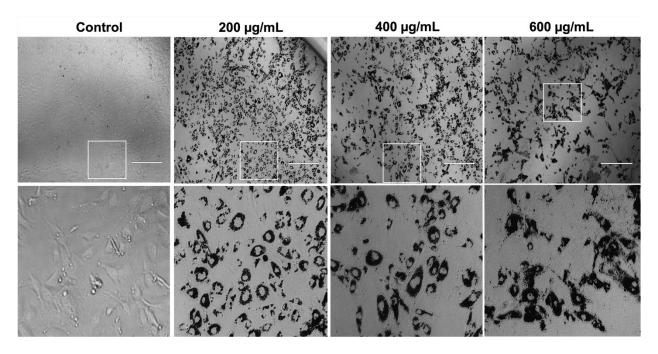


Figure S3: Bright field images of HuVEC cells incubated with different concentrations of Prot-ION. Bottom panel images are enlarged from areas indicated as white squares in top panel.

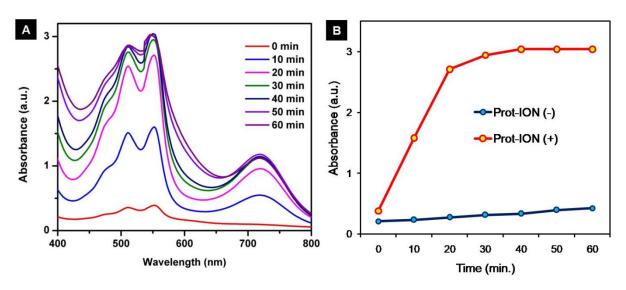


Figure S4: (A) UV-visible spectra of DPD solution as a function of reaction time of 60 min in presence of Prot-ION (B) Time dependent increase in ROS in acidic conditions in presence of  $H_2O_2$  and Prot-ION