

# CPN™ – CONJUGATED POLYMER NANOPARTICLES

With immensely bright emission properties and highly specific targeting capabilities, our non-toxic CPN™ molecular probes have many advantages over traditional dyes in a variety of R&D applications, including in vitro imaging and labelling.



## CPN™ 820 IR-I (COOH, Maleimide, Alkyne, Streptavidin)

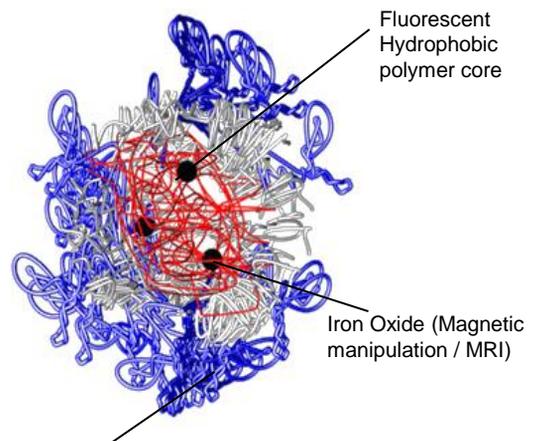
### Conjugated Polymer Nanoparticles (CPN)

CPN™ 820 (IR-I) has ex/em maxima of 640/820nm which means it is compatible with instruments with 610 or 639nm laser excitations. CPN™ 820 (IR-I) can be readily combined with additional CPNs™ to label multiple cellular proteins or biological sample components within the same mixture with minimal spectral overlap.

All CPNs™ come PEGylated as standard. CPNs™ are available with a number of surface chemistries including a carboxyl surface, maleimide, and alkyne (click chemistry), to fit desired linkage preferences. The CPNs™ are also available linked to streptavidin to bind biotinylated molecules.

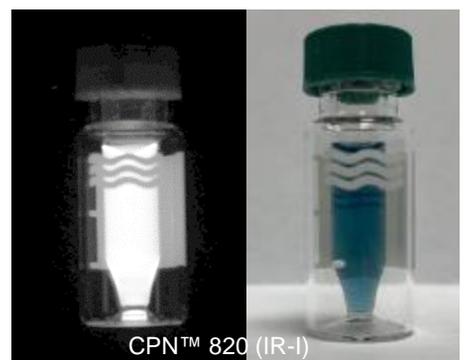
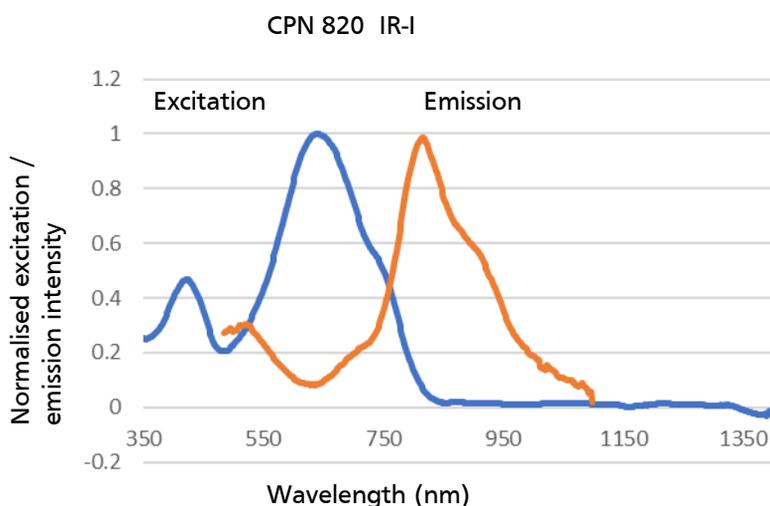
### Biological Properties:

CPNs™ readily conjugate to biomolecules such as antibodies or streptavidin. The intense brightness of CPNs™ dramatically increases sensitivity with single nanoparticles detectable in flow cytometry and immunocytochemistry. CPN™ conjugates can be used in 'end user' assays at concentrations matching those of other conjugated fluorophores. Due to differences in assay systems working dilutions should be determined by titration assay. CPNs™ are both thermal and photostable, however once conjugated to biological materials, they should be stored at 2-6° C.



Conjugated Targeting moieties bound to surface: e.g. antibody / oligonucleotide / protein / fab fragments / streptavidin

Ex / Em	640 / 820 nm
Storage	Ambient temp / CPN + Streptavidin / Antibody store at 4 °C
Conc'	0.1mg/ml (1x10 <sup>9</sup> CPN / ml)

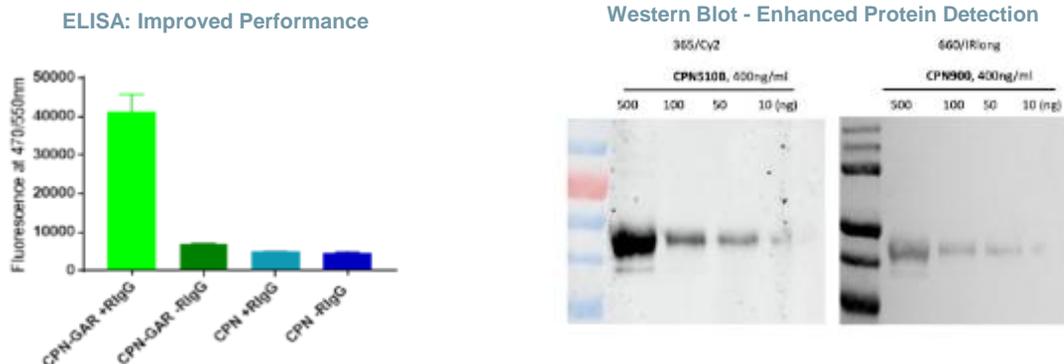


### Applications

- Cell imaging / tracking
- Lateral Flow & Vertical Flow Assays
- Western blotting
- Immunohistochemistry
- Fluorescent ELISA
- Flow cytometry
- Fluorescent In Situ Hybridisation

## Structural Properties:

CPNs™ are water-soluble micelles comprising of a Light Emitting Polymer and are around 70-80 nm in size encapsulated within a biocompatible surfactant, increasing the hydrophilicity and allowing them to form micelles. This 'core-shell' structure, consisting of the polymer forming the core and the surfactant the surrounding shell, provides a ready base on which to covalently bond functionalising molecules, such as streptavidin, antibodies, targeting proteins or nucleic acids. CPNs™ also incorporate iron oxide into their core. This allows CPNs™, and the molecules or cells to which they are attached, to be manipulated using magnets to direct movement and facilitate purification. The iron oxide can be also be visualised using Magnetic Resonance Imaging (MRI), acting as a contrast reagent



The exceptional brightness of CPNs™ allows for the detection of low levels of analytes. The CPNs™ exceptional stability gives a long lasting read out, advantageous for automated systems, and ease of handling. Utilising the magnetic properties during conjugation for localisation of the CPNs™ yields a further 10 fold increase in signal, allowing even greater sensitivity and earlier detection of biomarkers.

For the full CPN™ Range visit <https://www.streambio.co.uk/products/>

CPN	Ex / Em	CPN	Ex / Em
CPN 420 (Violet)	390 / 420	CPN 610 (Orange)	480 / 610
CPN 435 (Indigo)	390 / 435	CPN 680 (Red)	400 / 680
CPN 475 (Blue)	390 / 475	CPN 770 (IR-I)	610 / 770
CPN 510 (Green)	450 / 510	CPN 820 (IR-I)	640 / 820
CPN 510B (Green)	400 / 510	CPN 840 (IR-I)	630 / 840
CPN 550 (Yellow)	470 / 550	CPN 1000 (IR-II)	750 / 1000
CPN 580 (Orange)	488 / 580		

## Rapid Conjugation of CPNs

LINKBRIGHT™ CPN Conjugation kits allow covalent linkage reactions to be readily carried without access to specialist chemistry capabilities. Our kits are designed to be specific for CPN amine or thiol chemistry linkage to IgG antibodies or oligonucleotides, with rapid reaction times of 30mins (amine) or 60mins (thiol). The kits are available in three sizes sufficient for 10µg, 30µg and 100µg of IgG antibody conjugation, or for ~6nmole, ~18nmole and ~60nmole of oligonucleotide conjugation

### LINKBRIGHT™

Amine & Thiol, Antibody &  
Oligonucleotide Conjugation kits

<https://www.streambio.co.uk/linkbright-kits/>