

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™ 420

(COOH, Maleimide, Alkyne, Streptavidin)

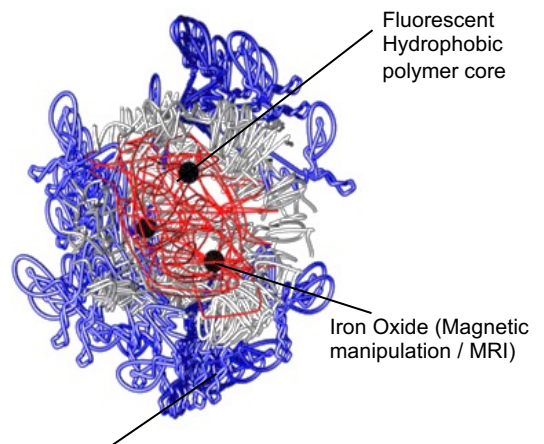
Conjugated Polymer Nanoparticles (CPN)

CPN™ 420 (Violet) has ex/em maxima of $^{390}_{420}$ which means it is compatible with instruments with 405, 375 or 355 nm laser excitation or standard filter sets such as those for DAPI. CPN™ 420 (Violet) 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.

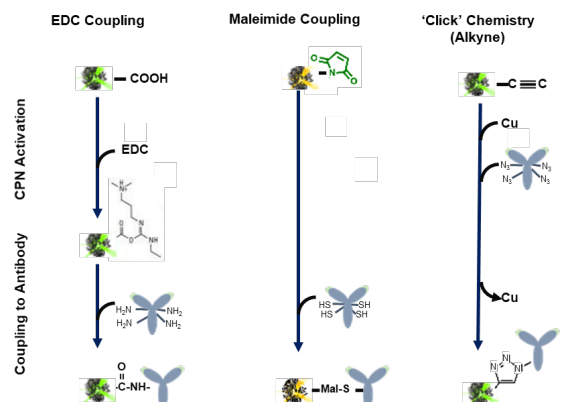
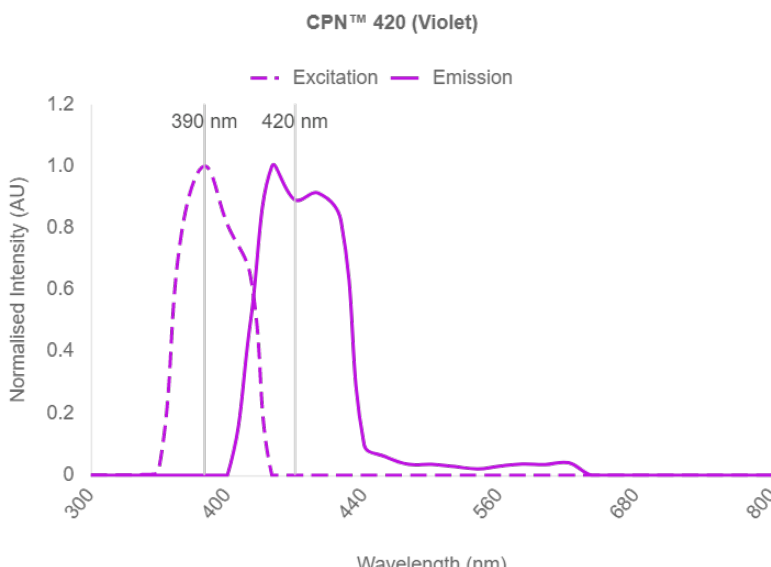
Biological Properties:

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 | 390 / 420 nm |
| Storage | Ambient temp / CPN + Streptavidin / Antibody store at 4 °C |
| Conc' | 0.1mg/ml (1x10 ⁹ CPN / ml) |

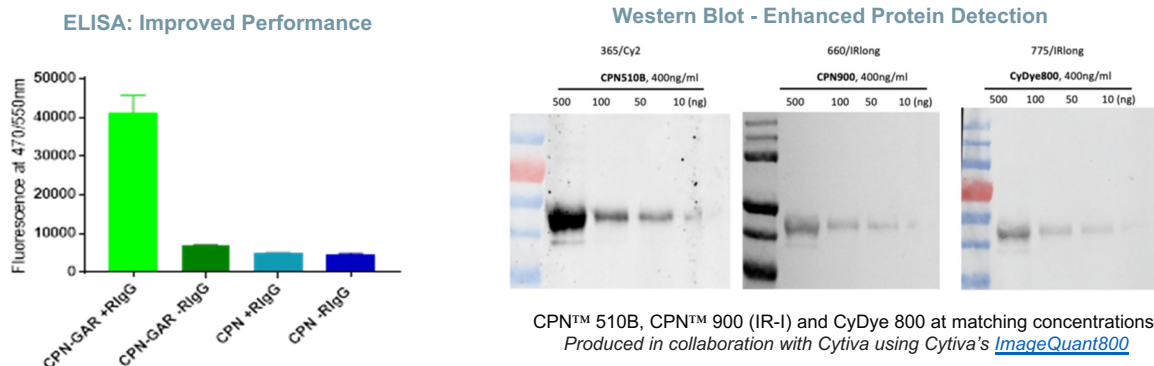


Applications

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

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 660 (Red) | 540/660 |
| CPN 475 (Blue) | 390/475 | CPN 680 (Red) | 400/680 |
| CPN 510A (Green) | 455/510 | CPN 770 (IR-I) | 610/770 |
| CPN 510B (Green) | 400/510 | CPN 820 (IR-I) | 640/820 |
| CPN 530 (Green) | 455/530 | CPN 830 (IR-I) | 610/830 |
| CPN 550 (Yellow) | 470/550 | CPN 840 (IR-I) | 630/840 |
| CPN 580 (Orange) | 488/580 | CPN 1000 (IR-II) | 750/1000 |

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/>

