

## Lyof™ Iron Oxide Nanoparticles with Carboxylic Acid Group ([Catalog # SYP](#))

**Description:** SYP is a group of water soluble iron oxide nanoparticles with amphiphilic polymer coating in lyophilized solid form. SYP can be reconstituted in DI water, DMSO or DMF to any desired concentration less than 10 mg Fe/ml. The reactive group is carboxylic acid and their zeta potential is from -30 to -50mV. Their organic layers consist of a monolayer of oleic acid and a monolayer of amphiphilic polymer. The overall thickness of the organic layers is about 4 nm. The hydrodynamic size of the nanoparticles is about 8-10 nm larger than their inorganic core size measured by TEM.

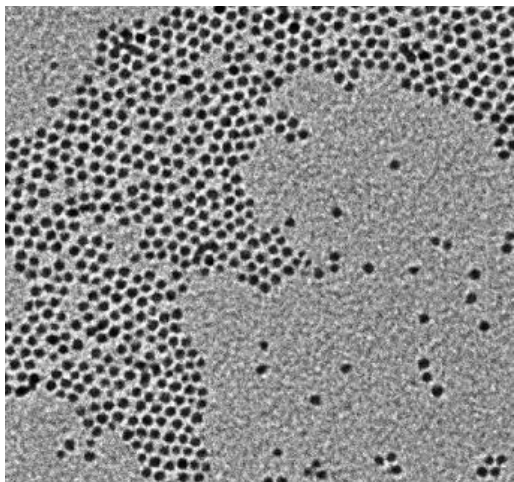
Reconstituted SYP is very stable in most buffer solutions in the pH range of 4-10.

You can do your conjugation using SYP in the solvent system of your choice, either aqueous or organic solvent. Reconstituted SYP in water can be conjugated to protein, peptide and other amine containing molecules by following our standard Conjugation Protocol. If you need to perform SYP-protein conjugation, we recommend that you remove your original buffer solutions and use our Coupling Buffer to disperse your protein for the conjugation. Otherwise, precipitation may occur. If it's your first time to perform this conjugation, you may use BSA as a model protein to get familiar with the whole process.

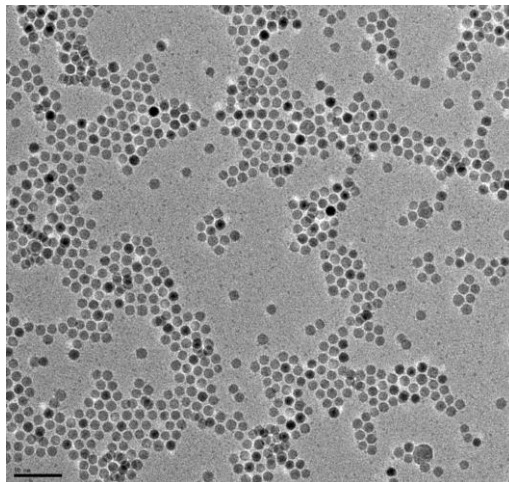
|                                 |  |
|---------------------------------|--|
| <b>Catalog number:</b>          | SYP  |
| <b>Product name:</b>            | Lyof™ Iron oxide nanoparticles with carboxylic acid group. |
| <b>Physical appearance:</b>     | Brown or black solid                                       |
| <b>Reactive group:</b>          | Carboxylic acid  |
| <b>Storage:</b>                 | 4-25°C   |
| <b>pH stability:</b>            | 4-10   |
| <b>Buffer stability:</b>        | Stable in Borate, Tris, HEPES, PBS, MES.                   |
| <b>Reconstitution solvents:</b> | DI water, DMSO, DMF  |
| <b>Shelf life:</b>              | 6 months. Use reconstituted samples within one week.       |
| <b>Amount:</b>                  | 1 mg (Fe)/vial   |
| <b>Other component:</b>         | Trehalose  |

|  |                                |      |      |                                |      |      |      |
|--|--------------------------------|------|------|--------------------------------|------|------|------|
| <b>IO size (nm):</b>                             | 5                              | 10   | 15   | 20                             | 25   | 30   | 40   |
| <b>Size tolerance (nm):</b>                      | 2.5                            | 2.5  | 2.5  | 2.5                            | 2.5  | 2.5  | 5    |
| <b>Size distribution:</b>                        | <10%                           | <10% | <10% | <10%                           | <10% | <10% | <10% |
| <b>Molar concentration (µM) of 5 mg/mL (Fe):</b> | 34.5                           | 4.3  | 1.35 | 0.55                           | 0.29 | 0.17 | 0.07 |
| <b>Structure:</b>                                | Maghemite                      |      |      | Magnetite                      |      |      |      |
| <b>Chemical Formula:</b>                         | Fe <sub>2</sub> O <sub>3</sub> |      |      | Fe <sub>3</sub> O <sub>4</sub> |      |      |      |

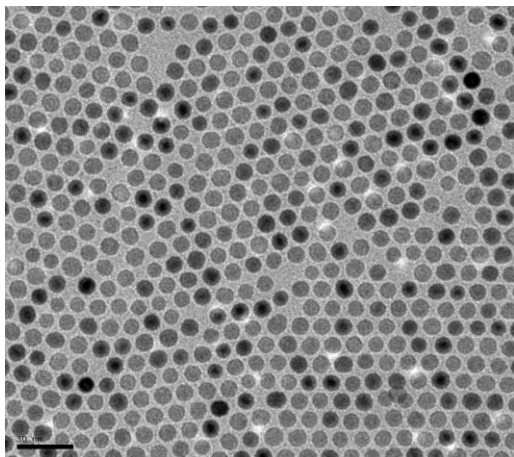
**TEM image of 5 nm IO nanoparticles**



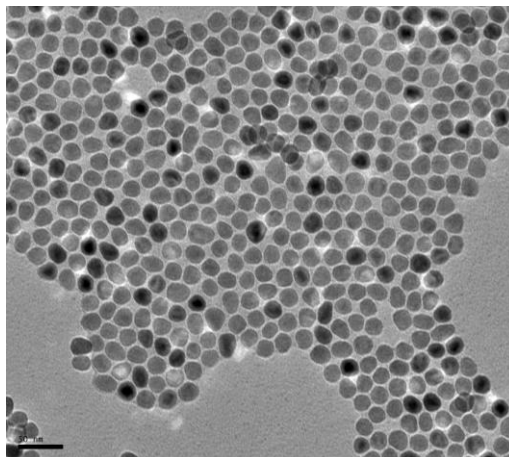
**TEM image of 10 nm IO nanoparticles**



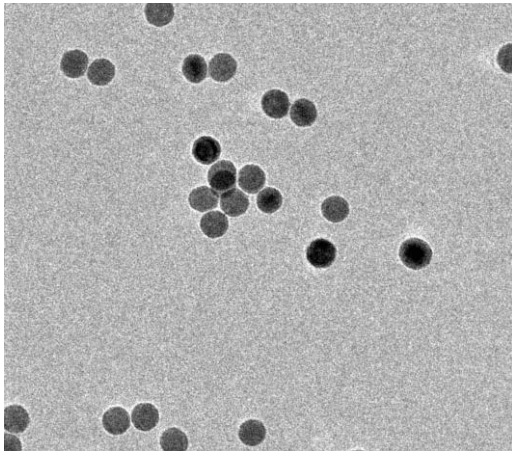
**TEM image of 15 nm IO nanoparticles**



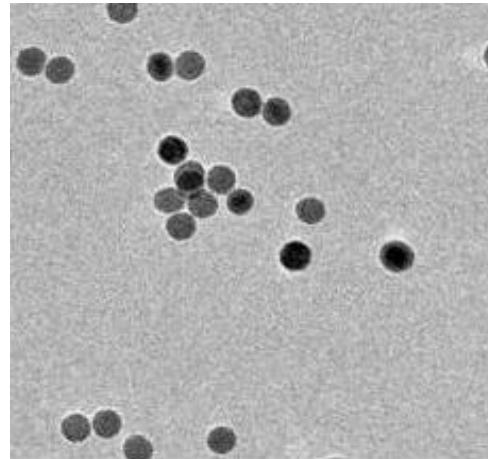
**TEM image of 20 nm IO nanoparticles**



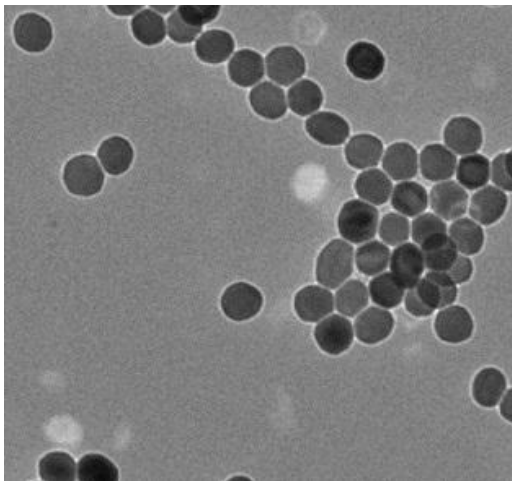
**TEM image of 25 nm IO nanoparticles**



**TEM image of 30 nm IO nanoparticles**



**TEM image of 40 nm IO nanoparticles**



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