CS65i

99.7% Semiconducting Single-Wall Carbon Nanotubes

CS65i is a semi-conductor grade single-wall carbon nanotube (SWCNT) product which is produced using the patented CoMoCAT™ synthesis process, followed by a proprietary chiral separation process. Approximately 99.7% of the SWCNTs in CS65i are expected to be semiconducting, with the dominant chirality being (6,5).

Property	CS65i	Measurement
Carbon Purity	≥ 95 wt%	TGA
CNT Purity	≥ 94 wt%	TGA
Average Diameter	0.79 nm	TEM
% Semiconducting CNTs	99.7%	UV-Vis-NIR
% of CNTs that are (6,5) Chirality	85%	UV-Vis-NIR
Average Length	0.5 to 2 µm	AFM
G/D Ratio	≥ 20	Raman (633nm)

CS65i is available either as a water-based dispersion or a dry form.

The dispersion form consists of 20 mg/L of SWCNTs dispersed using 2% Deoxycholate in an aqueous solution. This dispersion is available in either 25 ml or 100 ml sizes. The 25 ml size contains 0.5 mg of SWCNTs; the 100 ml size contains 2.0 mg. The dispersion can be further diluted to as low as 5 mg/L using deionized water.

The dry form is prepared by precipitating the dispersion sample, followed by washing, filtering, and drying. Solids are then left on the filter media for ease of handling. The filter media used is Whatman polytetrafluoroethylene membrane filter with a polypropylene backing (47 mm diameter, 1 micron pore size). Solids can be released from the filter media by immersing in a liquid and using probe sonication. The standard dry sample size contains 2.0 mg of SWCNTs.

Let us help you!

The material scientists and engineers in CHASM's Application Development Center are available to help you determine the product form that is optimal within your application, and provide the guidance to make it scalable and commercially viable.

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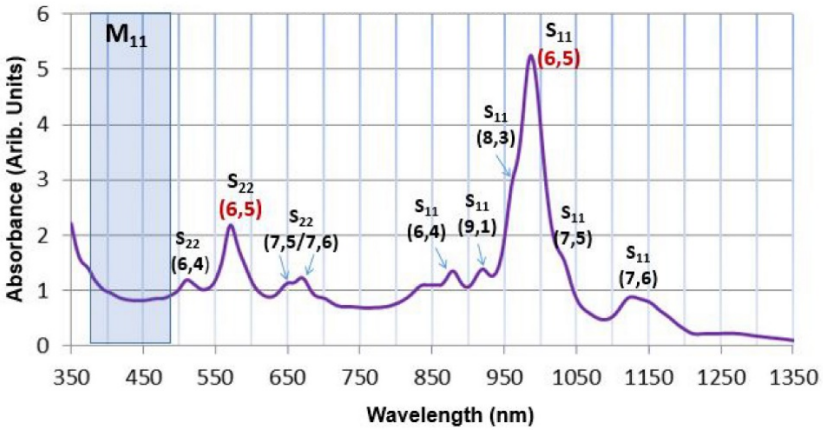
Supporting Data

UV-Vis-NIR Optical Absorption Spectra



UV-Vis-NIR spectra referenced against the appropriate polymer solution showing the specific chiral absorption transitions as noted. The optical absorption spectra for CS65i shows no detectable absorption peaks in the wavelength region where one would expect to see M11 transitions for the metallic SWCNTs that are known to be in the starting material prior to chiral separation (i.e., no peaks observed for (5,5), (7,4) and (6,6) chiralities). The area where one would expect to see peaks for metallic transitions is shaded blue in the figure above. It is also clear that the strongest S11 and S22 transitions for the semiconducting SWCNTs are associated with (6,5) chirality. This chiral purity is consistent with the distinct purple color observed for the dispersion sample.

Please note that CHASM is developing the capability to prepare Chirally-Pure samples for other SW CNT chiralities as well. Applications Engineers are available to provide additional data and technical support to help you integrate Signis CNTs into your application. Email sales@chasmtek to request additional information.