Suggested protocol for preparing a dispersion of SWINTs

Application Note

- Prepare a 1% by weight solution of SDBS (sodium dodecylbenzenesulfonate) in DI H_2O or in D_2O. (Use D_2O to make spectral measurements at wavelengths beyond 1350 nm, where H_2O begins to absorb strongly).
- In a small glass container (such as a scintillation vial), add ~10 micrograms of raw solild SWNT material per mL of SDBS solution. (the quantity of SWNT is not at all critical)
- Using a immersion tip ultrasonicator (with ~3 mm diameter tip), agitate the mixture at a power level of ~5 to 10 W. Place a water or ice bath around the container to prevent excessive heating. Optimal sonication time will vary with the type of sample and application. The liquid should begin to turn gray within seconds as nanotubes disperse, and it should continue to darken as the dispersion process continues. Excessive sonication may cause undesired shortening and/or damage to nanotubes.
- To prevent acid-quenching of the SWNT fluorescence, add a drop of NaOH solution. Fluorescence should be readily measurable from the sample at this point.
- Undispersed solids or visible small particles may remain after ultrasonic treatment. If it is desired to remove these, the sample can be subjected to moderate centrifugation at ~10,000 x g . This should give a supernatant layer free of visible particles.
- Note that oxidative or acid treatments of the SWNT material are likely to cause sidewall chemical reactions that will permanently suppress SWNT near-IR fluorescence. The most strongly emissive samples will be prepared from pristine, "unpurified" nanotube material.

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