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Size Selective Interaction of Single Wall Carbon Nanotubes with Collagen SANJIB BHATTACHARYYA, JEAN-PAUL SALVETAT, CRMD-CNRS, 1B rue de la Ferollerie, Orleans 45071, France, DEBDULAL ROY, National Physical Laboratory, Hampton Road, Teddington, Middlesex TW11 0LW, U.K., MARIE-LOUISE SABOUNGI, CRMD-CNRS, 1B rue de la Ferollerie, Orleans 45071, France — One of the big challenges in using single-wall carbon nanotubes (SWNTs) in nanotubeelectronics at the present time is to produce SWNT's of specific diameters. Unfortunately, it is almost impossible to achieve this by existing synthesis procedures. All these produce SWNT's with a mixture of diameters and chiralities and, therefore, different electrical properties such as semiconducting and metallic. Here, we propose a method of functionalization that selects SWNTs of a single specific diameter from a mixture of tubes. We have shown that denaturation of collagen type-I solution in the presence of sodium dodecyl sulphate (SDS) and SWNT's leads to wrapping of carbon nanotubes of a specific diameter by collagen peptides, which are soluble in water. Separation is achieved by centrifugation of the solution at 10,000 RPM and taking the supernatant, which is rich in nanotubes having one specific diameter.

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