PREPARATION AND HPLC APPLICATIONS OF A NEW CARBON NANOTUBE-SILICA HYBRID COLUMN PACKING MATERIAL

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Carbon nanotubes (CNTs) belong to a group of nanomaterials made up entirely of carbon. They have been used in a variety of applications from nanoelectronics to medicinal chemistry. Carbon nanotubes can be bound to chromatographic matrices (silica gel) and their affinity to different molecules can be monitored by HPLC \cite{1-3}.

In this study, a non-covalent hybrid column packing material (Si-SWCNT) was prepared by interacting carboxylated single walled carbon nanotube (SWCNT-COOH) with amino propyl silica gel (Scheme 1). For this purpose, spherical silica gel (4 µm particle size, 60 Å pore radius) was allowed to react with aminopropyl trimethoxysilane and, then, it was bound to single walled carbon nanotube to give the hybrid packing material.

The column packing material was characterized by elemental analysis, IR and SEM. It was packed into 2×100 mm HPLC columns and was used for the separation of a variety of compounds of different polarity.

\textbf{Scheme 1.} Preparation of SWCNT-Silica hybrid packing material

KEYWORDS: Single walled carbon nanotube, silica gel, hybrid packing material

REFERENCES:

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