

Recovery of spilled oil in water using Carbon Nanotube (CNT) Technique

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With a large number of oil spill accidents over the world in last 3 decades, oil spills are becoming one of the significant causes of major economic and biodiversity losses. Of these, the BP oil spill at the Gulf of Mexico in 2010 is considered to be the worse with a loss of 45 million barrels of oil and 38 billion US dollars. Considering adverse effect of oil spills, we must find effective Remediation for the same, Carbon Nanotubes (CNTs) show a great promise in cleaning oil spills. CNTs are the cylindrical tubes, which are made up of hexagon and pentagon of Carbons. CNTs are found in 2 main types as Single wall Nanotubes (SWNTs) with Diameter of 0.8 to 2nm and Multiwall Nanotubes (MWNTs) with Diameter of 5 to 20nm. When the MWNT are doped with boron it gives a compound which has better Oleophilic and Hydrophobic properties than ordinary CNTs. Arc discharge method and Chemical vapour deposition are two methods of this technique.

CNTs are doped with iron oxide and boron by method of CVD to increase its mechanical strength and absorption property. Further to make it use feasible in sea against the tides CNT can be grown on the stainless steel. The oil absorbed by the CNT sponges can be recovered by the method of electrolytic water imbibition (more than 95%). So larger volume of oil is recovered and CNT is recovered in high quality. CNTs have advantage to be reuse several time with almost same capacity to absorb oil using the absorption capacities of various materials for oil absorption and by using smaller amount of CNTs we can recover a huge amount of oil from oil spillage.