The catalyst is a substance, usually used in small amounts relative to the reactants, that increases the rate of a chemical reaction without itself undergoing any permanent chemical change.[[3]](https://en.wikipedia.org/wiki/Carbon_nanotube_supported_catalyst#cite_note-3) One or more kinds of catalysts can be loaded on another material with a high surface area, which serves as the support, to form a supported catalyst as a whole system. In a supported catalyst system, the significance of using the support are to increase the dispersion of the active phases, to have a better control of the porous structure, to improve mechanical strength, to prevent sintering and to assist catalysis.[[4]](https://en.wikipedia.org/wiki/Carbon_nanotube_supported_catalyst#cite_note-4) There is a wide spectrum of supports ranging from conventional and most commonly alumina to novel various kinds of activated carbon. Synthesis methods and functions vary greatly due to different kinds of support and catalytic materials.

The catalysts used for the production of CNTs are usually transition metals supported on silica (Hoyos-Palacio1, 2013), calcium carbonate, zeolites (Yu, 2006) or magnesium oxide (Pierre, 2002). All types of catalysts have been studied with the aim of increasing the productivity of CNTs, for improving their properties and modulate their structures. In this work a CVD process was used for the synthesis of CNTs, using different silica-supported catalysts, like Fe, Ni, Co and Mo. The wet-impregnated (Afolabi, 2009: Afolabi, *et al.,* 2011) method was used for the synthesis of supported metal catalysts.

The active transition metals can exist alone (Fe, Co, Mo, and Ni) or as a bimetallic (Fe-Co, Fe-Ni, Fe-Mo, Co-Mo, Mo-Ni and Co-Ni), tri-me­tallic (Fe-Co-Ni, Co-Mo-Fe, Co-Mo-Ni), or sometimes ternary (Fe-Co- Ni-Mo) catalyst (Dervishi, *et al.,* 2009; Aliyu, 2017). However, the production of CNTs from a bimetallic catalyst supported on a substrate appears more promising due to the increase in the catalytic performance and enhanced CNT yield (Jeong, *et al.,* 2010; Aliyu, *et al.,* 2017). The use of CaCO3 sup­ported on a Fe-Co catalyst for effective MWCNT production using acetylene as the carbon source was reported by Chiwaye and Mhlanga (Chiwaye, *et al.,* 2014; Mhlanga, *et al.,* 2009). The authors observed the presence of CaO in the synthesized MWCNTs due to the partial decomposition of CaCO3. Bahgat (Bahgat, *et al.,* 2011) investigated the synthesis of MW­CNTs obtained from a bimetallic catalyst (Fe-Co) supported on CaCO3 and found that as the crystal sizes reduced at high­er temperatures, the CNT yield increased with temperature increases. Similarly, Motchelaho and his group (Motchelaho, *et al.,* 2011) produced MW­CNTs from Fe-Co supported CaCO3 using the CVD method and found that 10% Fe-loaded acid treated CNTs possessed better activity than unpurified CNTs.

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