

# Surface Functionalization of Carbon Nanotubes Using Ozone

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## Executive Statement:

This technology enhances the properties of carbon nanotubes (CNTs) for improved film adhesion and mechanical stability in various applications.

## Technology Overview:

A novel method for the surface functionalization of carbon nanotubes using ozone to increase oxygen or defect sites. This process makes CNTs more suitable for subsequent chemical vapor deposition (CVD) or atomic layer deposition (ALD) of metals or metal oxides, aiming to improve film adhesion and mechanical stability by increasing nucleation sites.

## Key Advantages:

- Simplifies the functionalization process of CNTs
- Operates at lower temperatures compared to existing methods
- Improves adhesion and mechanical stability of films on CNTs
- Increases nucleation sites for CVD or ALD of metals or metal oxides

## Problems Addressed:

- Difficulty in achieving uniform and stable metal or metal oxide films on CNTs
- High operational temperatures required by previous methods
- Limited nucleation sites on untreated CNTs for film deposition

## Market Applications:

- Electronics: Enhancing the performance of electronic components through improved CNT interfaces
- Energy: Development of more efficient and stable electrodes for batteries and fuel cells
- Coatings: Advanced protective coatings with enhanced mechanical properties
- Medical devices: Improved biocompatible surfaces for various medical applications