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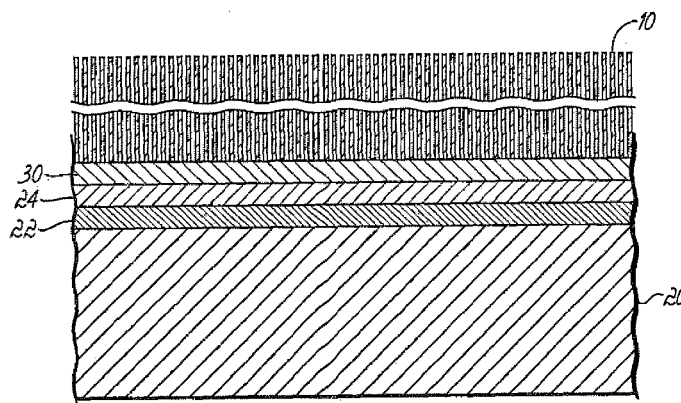
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(54) Title: COMPOSITE CATALYST AND METHOD FOR MANUFACTURING CARBON NANOSTRUCTURED MATERIALS



(57) Abstract: A method of forming a carbon nanotube array on a substrate is disclosed. One embodiment of the method comprises depositing a composite catalyst layer on the substrate, oxidizing the composite catalyst layer, reducing the oxidized composite catalyst layer, and growing the array on the composite catalyst layer. The composite catalyst layer may comprise a group VIII element and a non-catalytic element deposited onto the substrate from an alloy. In another embodiment, the composite catalyst layer comprises alternating layers of iron and a lanthanide, preferably gadolinium or lanthanum. The composite catalyst layer may be reused to grow multiple carbon nanotube arrays without additional processing of the substrate. The method may comprise bulk synthesis by forming carbon nanotubes on a plurality of particulate substrates having a composite catalyst layer comprising the group VIII element and the non-catalytic element, in another embodiment, the composite catalyst layer is deposited on both sides of the substrate.



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