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ADDITIONAL CHARACTERIZATIONS



Fig. 1 HRTEM images of the delaminated CNFs after 15 min growth. From the EDAX we can see that the catalyst contains both Pd and Ni. Although Ti was not detected, it is still possible that the catalyst is a ternary alloy of Pd-Ni-Ti since Ti was detected by XRD on the CNF mat and no Ti was present on the surface of the Si wafer.



Fig.2 XRD characterization of the CNF mat (A) and of the Si wafer from which the mat delaminated (B). The XRD of the CNF mat (A) shows the crystalline structure of Pd and also an alloy between the Ni and Ti (Ni₃Ti). The XRD of the Si wafer from which the mat delaminated shows that no Pd, Ni, or Ti were left on the wafer's surface (B).



Fig. 3 Photo showing the mats synthesized for increasing growth durations (from 30 seconds to 90 minutes) on SiO_2 (above) and Si (below) substrates. For each experiment of set growth duration, both samples (Si and SiO_2 substrate) were synthesized in the same experiment. We can clearly observe that the yield increases with growth duration for both substrates. Quantitative information and description of the morphologies obtained are described in the paper.



Fig. 4 HRTEM images of the CNFs shows diameter distribution of 105 nm and standard deviation of 23 nm (using imageJ to measure the diameters from the HRTEM images)



Fig. 5 Contact angle measurement indicated 157° (superhydrophobicity)



Fig. 6 Raman spectroscopy of the CNF mats indicated a G/D ratio of 0.9.