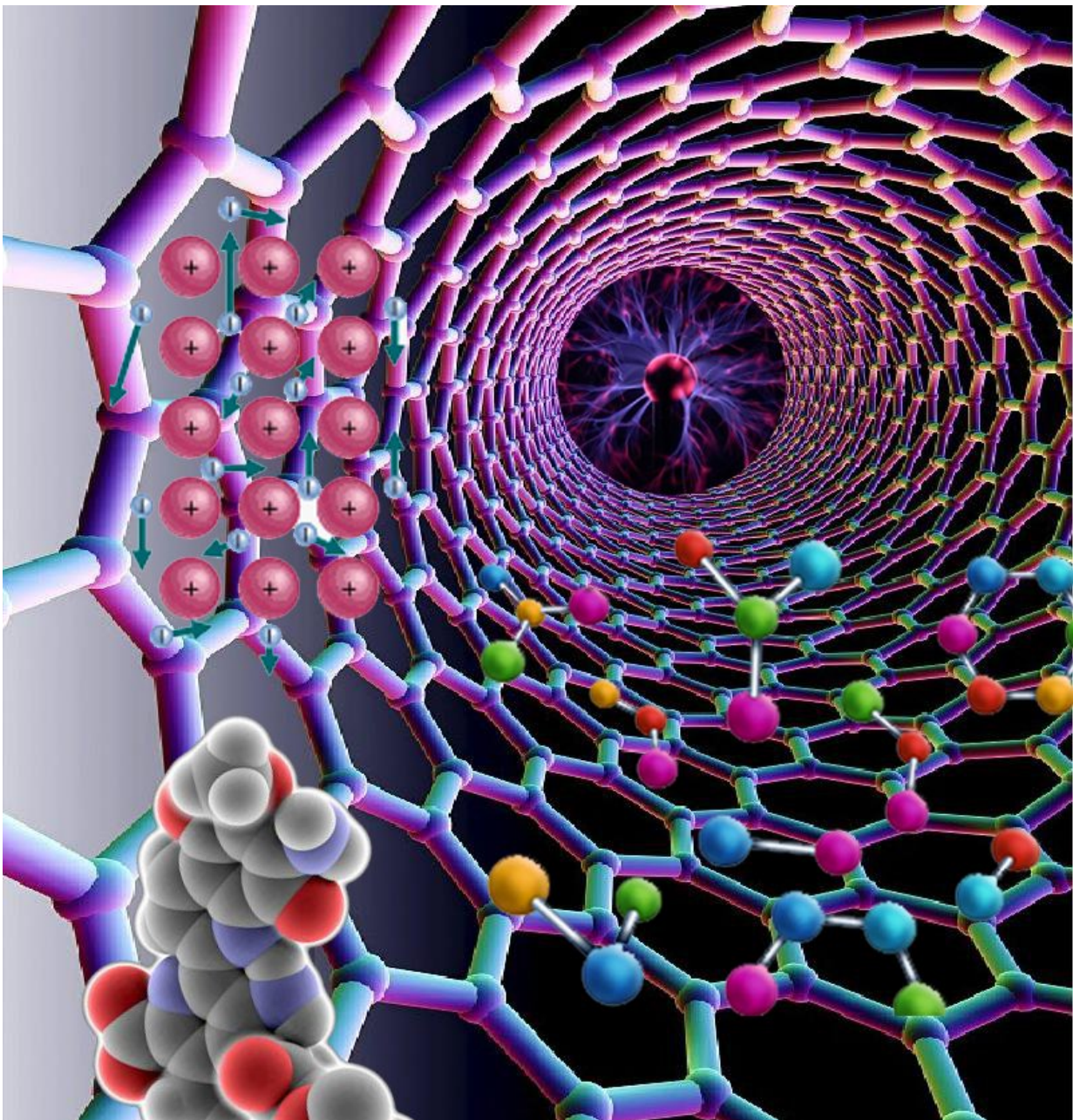


Researchers reveal high performance CNT catalyst relating to its electroconductivity

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A schematic illustration of hydroprocessing of Jatropha oil into biofuels over a high-performance Ni-HPW/CNT catalyst. It shows a significant performance boost in the catalytic process due to the excellent electroconductivity and coking tolerance of the CNT support. Credit: Long Rong

Recent research published in a report in *Nano* showed biofuels were obtained from Jatropha Oil using carbon nanotube (CNT) catalyst, which showed efficient cracking activity. The performance was activated by the high stability, metal sites, acid sites, electroconductivity, and coking tolerance of CNT. Two cracking circulations were found in the hydroprocessing. The sulphur-free process was also eco-friendly.

Hydroprocessing of vegetable oil is widely used to produce biodiesel. The catalyst is very significant for the performance of the process. As an electric charge carrier, the researchers found that the velocity of electron reaches the speed of light $1/300$ in graphene, far more than the normal conductor. Carbon nanotubes (CNT) are constructed of rolled up graphene sheets with one dimensional extended π conjugated structures.

A team of researchers from the Beihang University in China, Beijing has demonstrated that CNT catalysts showed efficient cracking activity. The electroconductivity of the CNT support was especially beneficial for the improvement of catalyst activity. The nickel (Ni) and phosphotungstic acid (HPW) supported on CNT were prepared by the team as catalyst for hydroprocessing of Jatropha oil. Their report appears in the December issue of the journal NANO.

The alkanes yield of C15-C18 was 88.5 wt%, Iso/n ratio was 0.8 and conversion was 97.7% at 320 °C, 3.0 MPa and 1.0/h over the Ni-HPW(40)/CNT catalyst, while the yield of catalyst can be regarded as an

attractive candidate for cracking conversion of vegetable oils due to its high performance and clean properties " according to Xiaosong Yang, the senior author of the paper. The Beihang University team is currently exploring catalysts with high performances.

More information: Xiaosong Yang et al, A Clean Hydroprocessing of Jatropha Oil into Biofuels over a High Performance Ni-HPW/CNT Catalyst, *Nano* (2017). [DOI: 10.1142/S1793292017501429](https://doi.org/10.1142/S1793292017501429)

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