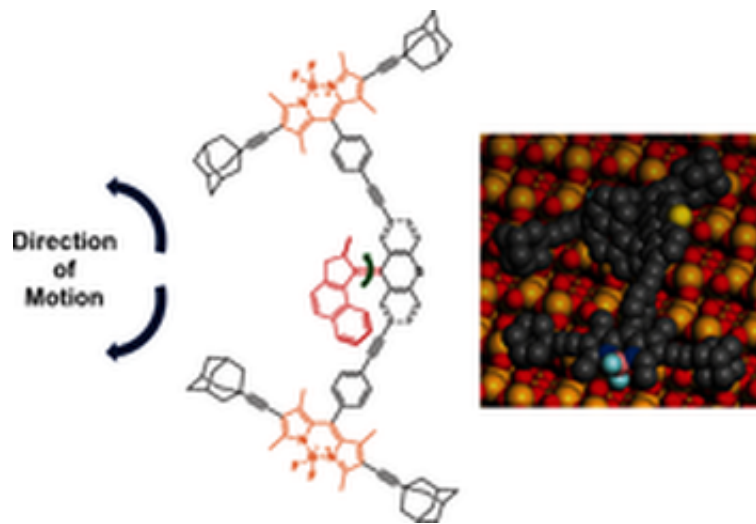


# Motorized nanocar powered by light

September 30 2015

---



Constructing nanomachines that move controllably across surfaces has the potential to enable researchers to build structures on the nanoscale from the bottom up, but is challenging on several fronts. How such a device can be "powered" so that it moves across a surface without sticking to it and how its movement can then be tracked are questions tackled by the group of James M. Tour in their latest report about the design of a new nanocar in *Asian Journal of Organic Chemistry*.

The nanocar was built by at Rice University, Houston, Texas, and has a [rotary motor](#), which provides "power" for the vehicle through light-induced isomerization. The isomerization causes the "motor" component

to flip its chemical configuration and propels the nanocar with a "paddle-wheel"-type motion. The second important feature is a fluorophore based on 4,4-difluoro-4-bora-3a,4a-diaza-s-indacene (BODIPY), which allows the movement of the nanocar to be tracked by single-molecule fluorescence microscopy while not interfering with the motion of the car on the surface or the function of the motor.

Construction of the nanocar is now complete and Tour says of the work: "We are now at a stage where we can begin the tracking experiments in these motorized nanocars!". The team is presently testing how the cars move on glass surfaces, which they expect to be in circles, and how the tracking system performs.

**More information:** Synthesis of a Light-Driven Motorized Nanocar, *Asian Journal of Organic Chemistry*, [dx.doi.org/10.1002/ajoc.201500325](https://doi.org/10.1002/ajoc.201500325)

Provided by Wiley

Citation: Motorized nanocar powered by light (2015, September 30) retrieved 25 April 2024 from <https://phys.org/news/2015-09-motorized-nanocar-powered.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.