Supplementary Information

Lipid nanotubes as an organic template for the fabrication of carbon nanostructures by pyrolysis

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Table S1: Raman assignment of the bands of the lipid DOPE

DOPE	
Wavenumber (cm^{-1})	**Assignment**
2999	$\nu_{as}(CH)$
2929	ν_{as} (CH_2)
2895	ν_s (CH_3)
2851	ν_{as} (CH_2)
1733	ν (C=O)
1654	ν (C=C)
1437	δ (CH_2, CH_3)
1298	τ (CH_2)
1261	δ (CH)
1084	ν (C-C)

ν: stretching, ν_{as}: anti-symmetric, ν_s: symmetric, δ: bending, τ: torsion

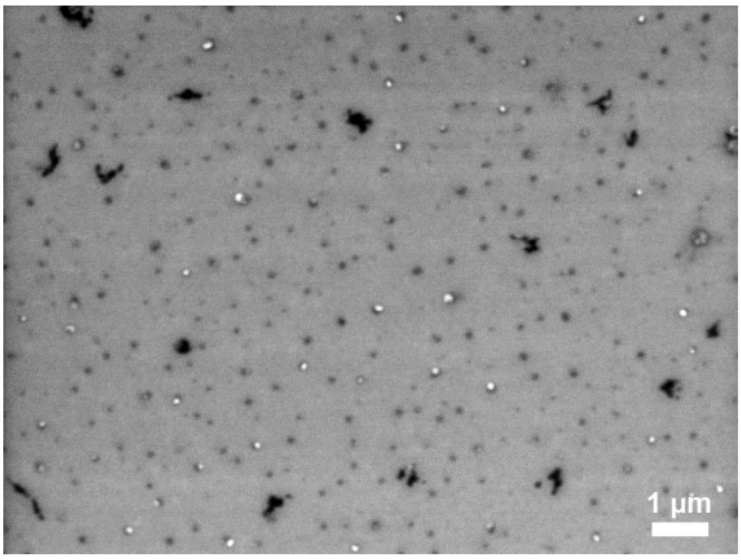

Figure S1: A scanning electron microscopy (SEM) image of destroyed lipid nanotubes (LNTs) on a silicon wafer after pyrolysis at 800 °C for 1 hour.

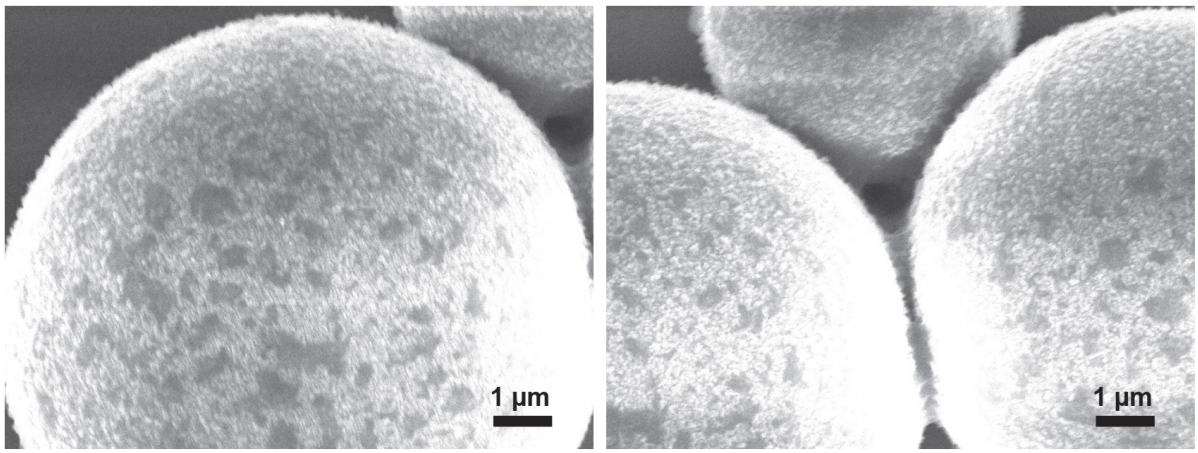

Figure S2: Scanning electron microscopy (SEM) images of lipid blocks after pyrolysis at 500 °C for 1h.

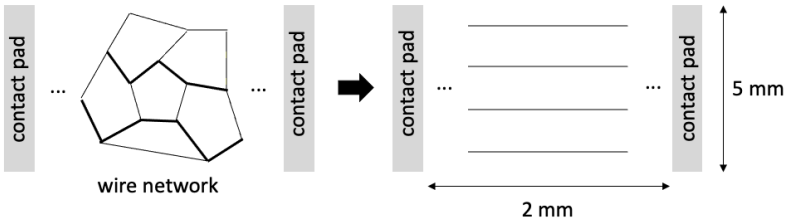

Figure S3: Calculation of the wire conductance

First, we estimated that the dimension of a single carbon wire is 3 nm in height and 40 nm in width from the AFM topology. Next, we approximated the nanowire network geometry as shown above. Although the actual network is quite complicated, the conductance between two contact pads mainly comes from the shortest paths along the way. This means that the main conductance comes from the thick lines on the left side of the scheme, which we approximated as the one shown on the right side by neglecting the connections vertical to the current path. Although this is a first approximation, this provides the order of magnitude of the conductance estimation. Based on the density of the wires and the size of the contact pads, we supposed that 5000 such wires are connected between two contact pads over 2 mm. Measured conductance (S) was converted into conductivity (S/m) based on these geometries.