MICHAEL D. C. SMITH#, GERREN D. SIMMS, and MENGYANG LI,
Departmentof Chemistry, Shepherd University, Shepherdstown, WV, 25443.

Formation of a langmuir monolayer by a non-polar hydrocarbon chain molecule $H(CH_2)_{29}H$.

Traditionally Langmuir monolayers and lipids bilayers (including cell membranes) on water interfaces are made of amphiphilic molecules with both polar hydrophilic and non-polar hydrophobic parts. It has been discovered that non-polar hydrocarbon chain molecules without the polar hydrophilic part, form Langmuir monolayers on water when the chain molecule has more than 30 carbon atoms, and form multilayers on water when the chain molecule has 30 or fewer carbon atoms. Here we report the surface pressure vs. area isotherm measurements of the $H(CH_2)_{29}H$ film on water, which show the film's maximum compression modulus (greatest resistance to lateral compression) at about 19 $Å^2$/molecule, independent of the compression rate, like the Langmuir monolayers of long chain saturated fatty acids do. The cross-section area of the hydrocarbon chain is about 19 $Å^2$. Our measurements indicate the formation of a Langmuir monolayer by $H(CH_2)_{29}H$, a non-polar hydrocarbon chain molecule with fewer than 30 carbon atoms. The mechanical properties of this new Langmuir monolayer are compared with the known Langmuir monolayers of the chain molecules with more than 30 carbon atoms.