Mechanical properties of polyethylene nanosphere: A molecular dynamics study

*Jianyang Wu, Shijo Nagao, Junhua Zhao, Jianying He, Hallvard Tyldum, Zhiliang Zhang**

Department of Chemistry, Norwegian University of Science and Technology, Trondheim, 7491-Norway
E-mail: Zhiliang.zhang@ntnu.no

ABSTRACT

Compression behaviours of polyethylene/Ni-polyethylene nanosphere have been studied by molecular dynamics simulations. Semi-crystalline lattice method is employed to generate the dense and entangled polyethylene nanosphere on a spherical diamond lattice with diameter d=20nm. The results show that compression force-strain behavior of the polyethylene nanosphere is temperature dependent - the lower, the stiffer. The end-to-end distance of inter-molecules becomes longer with the increase of compression strain. The nickel coating strongly strengthens the polyethylene nanosphere - the more thickness of nickel layer, the stronger it behaves.

References

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