Supporting Information

Destruction and recovery of nanorod conductive network in polymer nanocomposites via molecular dynamics simulation

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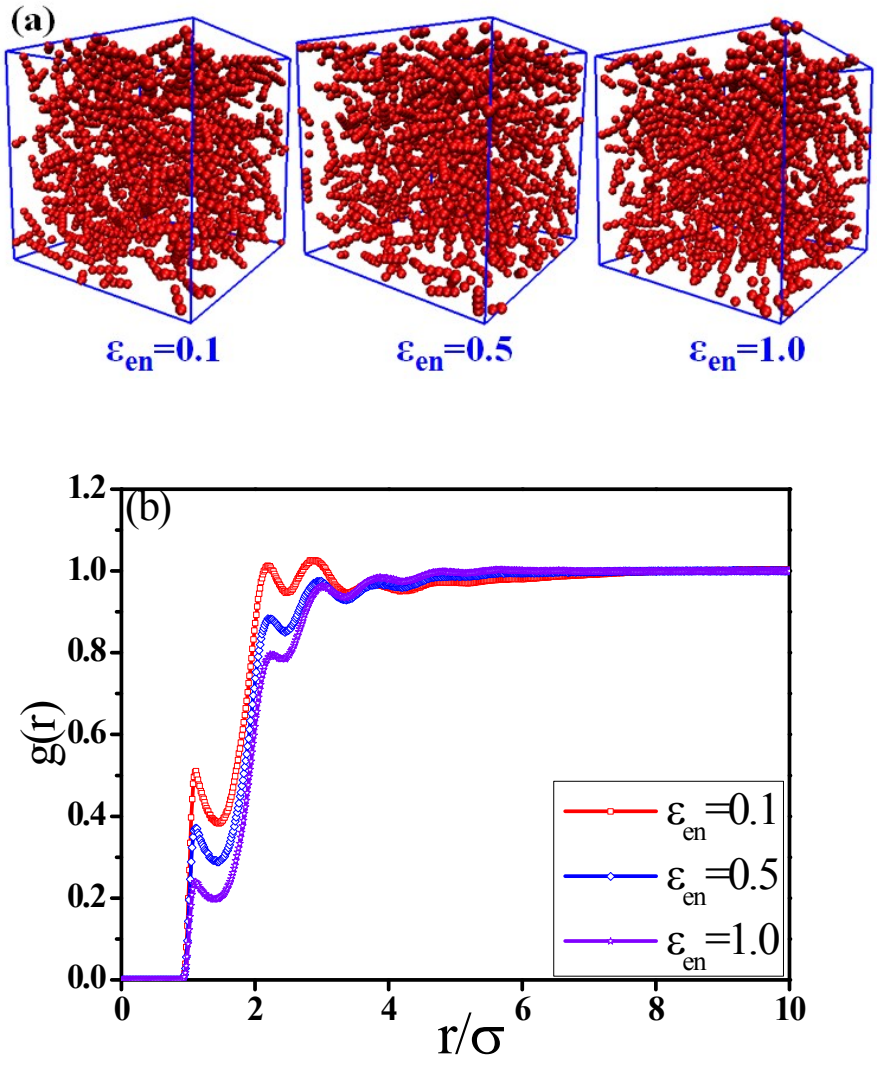
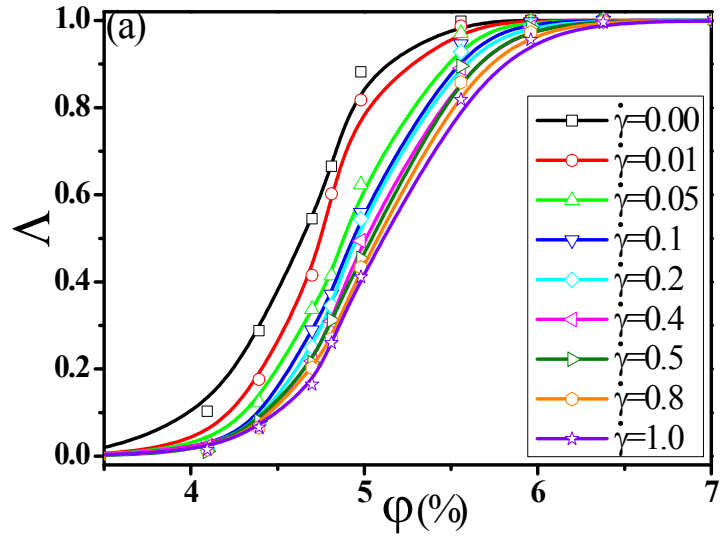
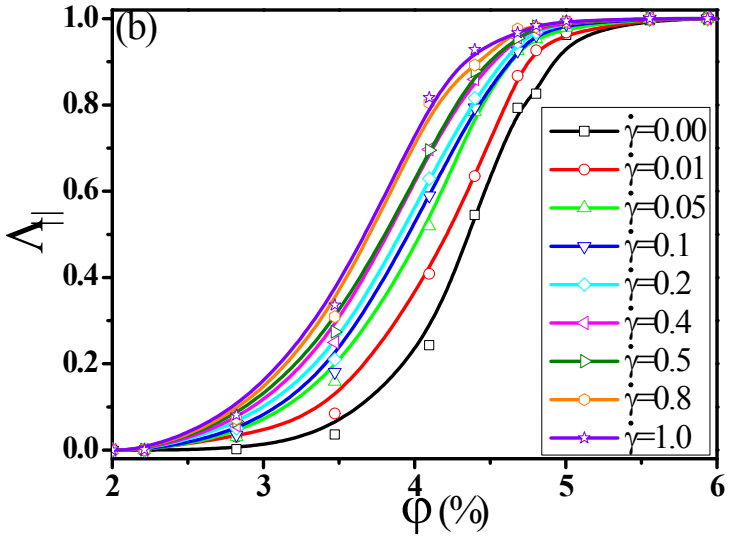


Fig. S1 (a) Snapshots of nanorods where the polymer chains are neglected for clarity; and (b) the inter-nanorod radial distribution function (RDF) for different interactions ε_{en}. (T^*=1.0, $\varphi = 4.68\%$, M=3)


(a)
1.0
0.8
0.6
0.4
0.2
0.0
Λ
4
5
6
7
φ(%)
γ=0.00
γ=0.01
γ=0.05
γ=0.1
γ=0.2
γ=0.4
γ=0.5
γ=0.8
γ=1.0


(b)
1.0
0.8
0.6
0.4
0.2
0.0
Λ||
2
3
4
5
6
φ (%)
γ=0.00
γ=0.01
γ=0.05
γ=0.1
γ=0.2
γ=0.4
γ=0.5
γ=0.8
γ=1.0

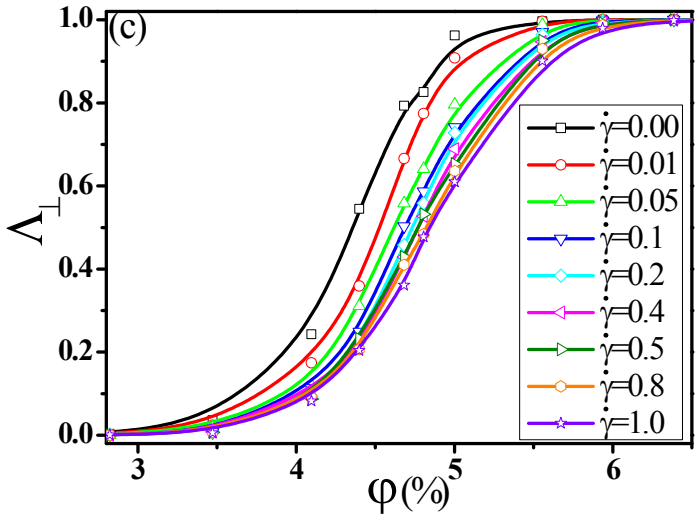


Fig. S2(a) Homogeneous conductive probability Λ, (b) directional conductive probability $\Lambda_{\parallel}$ parallel to the shear direction, and (c) directional conductive probability $\Lambda_{\perp}$ perpendicular to the shear direction of nanocompoites as a function of nanorod volume fraction φ for different shear rates $\dot{\gamma}$. (T^* =1.0, ε_{en} =0.5, M=3)

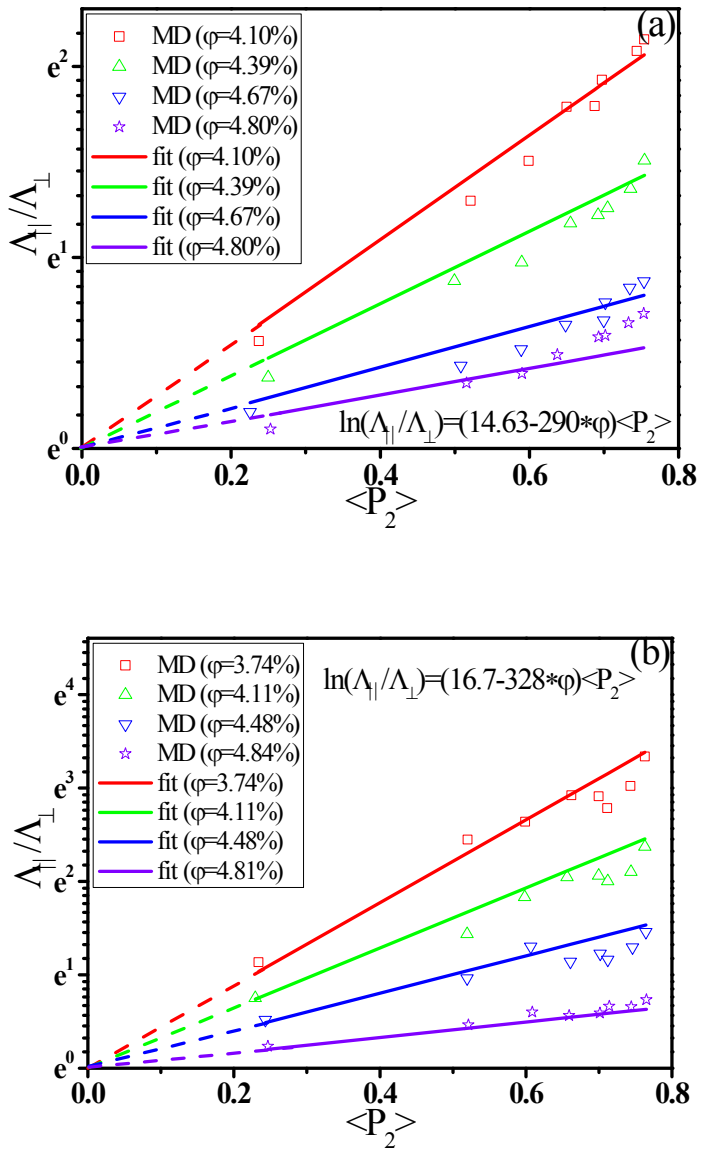


Fig. S3 The linear relation between the logarithm of anisotropy $\Lambda_{\parallel}/\Lambda_{\perp}$ of conductive probability and the orientation of nanorod $< P_2 >$ for four nanorod volume fractions φ for interaction (a) $\varepsilon_{en} = 0.1$ and (b) $\varepsilon_{en} = 1.0$. (T^* =1.0, M=3)