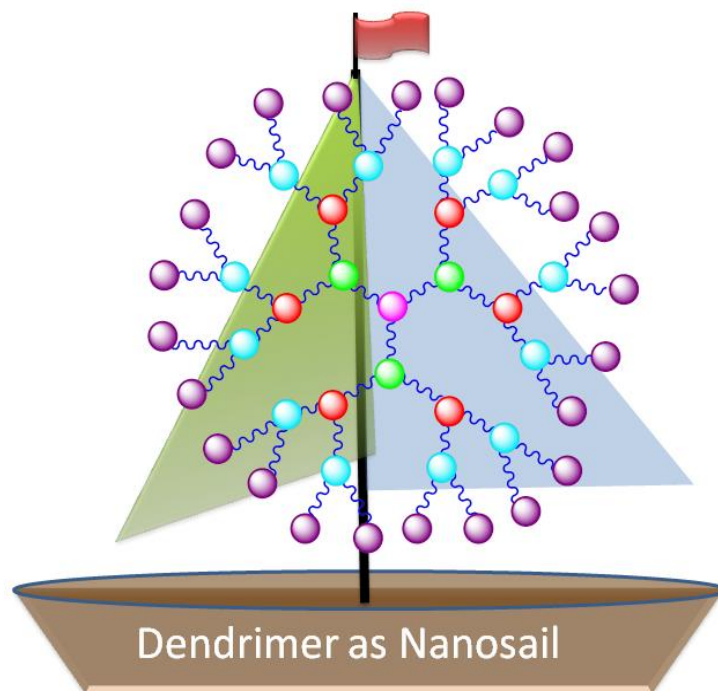


Dendrimer Nanosail

Myth busted: Larger polymers move faster than smaller ones

A new theory is obtained showing the polymer with the greater total mass (or size) moves faster than with the lesser mass (or size) in the external random flow.



All this while we had this concept in our mind that heavier/ bigger the object, the slower it moves. But the same does not hold true for polymers in random flow. They tend to behave anomalously. We show sail boat behavior of polymers in random flow with unexpected behavior of larger polymer moving faster than the smaller. A theory is developed for the dynamics of flexible branched polymers in the presence of external random flows. Our approach is more general as compared to the previous works which are applicable only for the linear chain polymers. The effect of the random flows on branching is understood through modeling as star polymers and dendrimers. Our research show that polymers can act as nanosail in external random flow fields. The potential applications of this work include drug delivery, food processing, cosmetic industry, drag reduction etc.