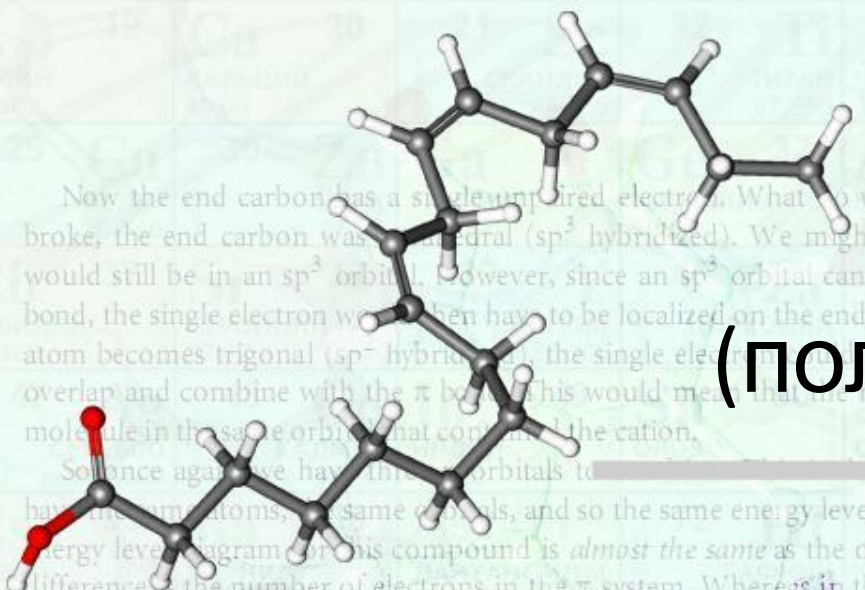


Лавсан (полиэтилентерефталат)



Now the end carbon has a single unpaired electron. What do we do with it? If the bond broke, the end carbon was radical (sp^3 hybridized). We might think that the single electron would still be in an sp^3 orbital. However, since an sp^3 orbital cannot overlap efficiently with a π bond, the single electron would have to be localized on the end carbon atom. If the end carbon atom becomes trigonal (sp^2 hybridized), the single electron could overlap and combine with the π bond. This would mean that the radical could be spread over the molecule in the same orbital that contained the cation.

So once again we have the same orbitals to share the same energy levels. In fact, the molecular orbital energy level diagram for this compound is *almost the same* as the one for the allyl cation: the only difference is the number of electrons in the π system. Whereas in the allyl cation π system we only had two electrons, here we have three (two from the π bond plus the single one). Where does this extra electron go? Answer: in the next lowest molecular orbital—the nonbonding molecular orbital.



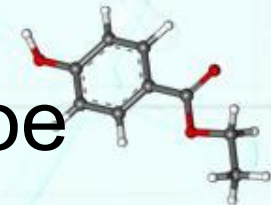
antibonding molecular orbital higher in energy than a p orbital

nonbonding molecular orbital same energy as a p orbital

this MO now has one electron in it. It is known as the Singly Occupied Molecular Orbital (SOMO) of the molecule.

Лавсан – полиэфирное синтетическое

волокно.



Физические свойства

← Аморфное состояние

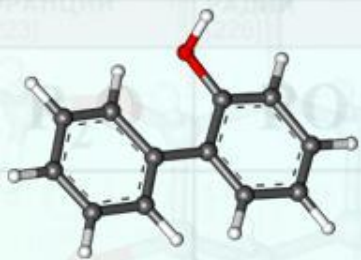
↓
твёрдое,
бесцветное,
прозрачное
вещество

→ Кристаллическое состояние

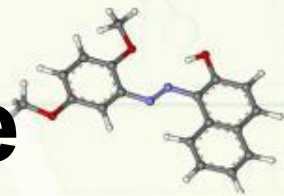
↓
белое,
непрозрачно
е
вещество

$$t_{\text{пл}} = 260^{\circ}\text{C}; t_{\text{ст}} = 70^{\circ}\text{C}; t_{\text{разл}} = 350^{\circ}\text{C}$$

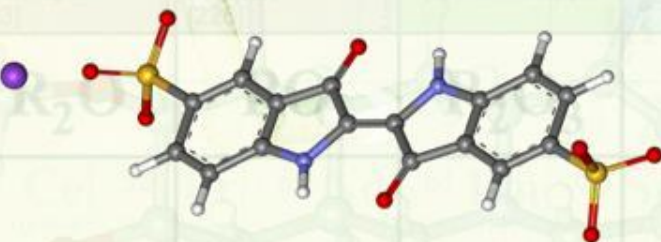
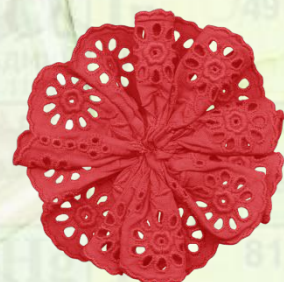
Не растворим в воде и органических растворителях, устойчив к воздействию кислот и растворов слабых щелочей



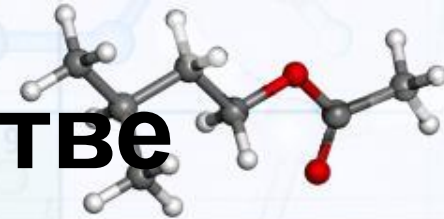
Применение в производстве



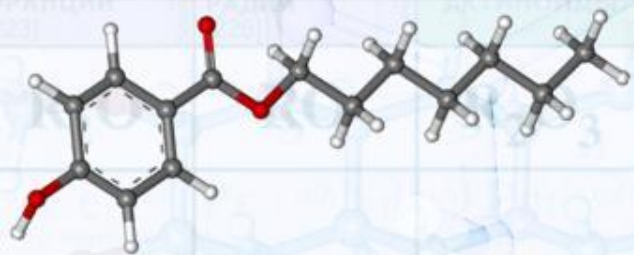
- изготовление трикотажа и тканей различных типов (тафта, жоржет, креп, пике, твид, атлас, кружево, тюль, плащевые и зонтичные полотна)



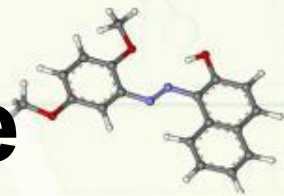
Применение в производстве



- изготовление плёнок, бутылей, упаковочного материала, контейнеров и т.д.



Применение в производстве



- изготовление канатов, парусов, рыболовных сетей и тралов, бензо- и нефтестойких шлангов, застёжек «молния», струн ракеток и т.д.

