

# Название презентации

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

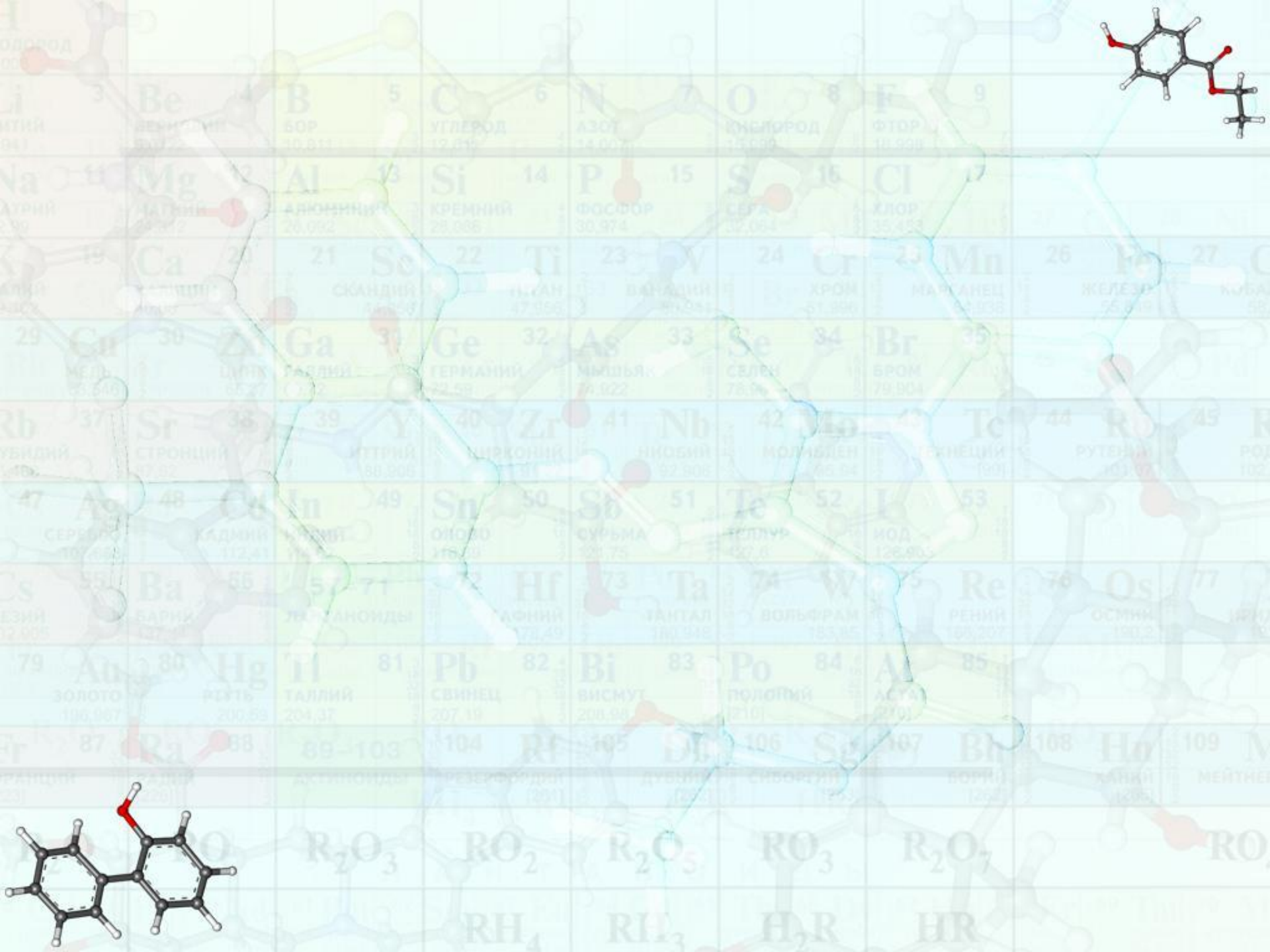
So once again we have three orbitals to have the same energy levels, and so the same energy levels. In fact, the molecular orbital energy level diagram for this compound is almost the same as the one for the allyl cation: the only difference is the number of electrons in the  $\pi$  system. Whereas in the allyl cation  $\pi$  system we only had two electrons, here we have three (two from the  $\pi$  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.



1  
H  
Водород  
1.00794

2  
He  
Гелий  
4.002602

3  
Li  
Литий  
6.941

4  
Be  
Бериллий  
9.0122

5  
B  
Бор  
10.811

6  
C  
Углерод  
12.011

7  
N  
Азот  
14.007

8  
O  
Кислород  
15.999

9  
F  
Фтор  
18.998



10  
Ne  
Неон  
19.99

11  
Na  
Натрий  
22.99

12  
Mg  
Магний  
24.31

13  
Al  
Алюминий  
26.98

14  
Si  
Кремний  
28.09

15  
P  
Фосфор  
30.97

16  
S  
Сера  
32.06

17  
Cl  
Хлор  
35.45

18  
Ar  
Аргон  
39.95

19  
K  
Калий  
39.10

20  
Ca  
Кальций  
40.08

21  
Sc  
Скандий  
44.96

22  
Ti  
Титан  
47.88

23  
V  
Ванадий  
50.94

24  
Cr  
Хром  
51.99

25  
Mn  
Марганец  
54.94

26  
Fe  
Железо  
55.85

27  
Co  
Кобальт  
58.93

28  
Ni  
Никель  
58.71

29  
Cu  
Медь  
63.55

30  
Zn  
Цинк  
65.39

31  
Ga  
Галлий  
69.72

32  
Ge  
Германий  
72.64

33  
As  
Мышьяк  
74.92

34  
Se  
Селен  
78.96

35  
Br  
Бром  
79.90

36  
Kr  
Криптон  
83.80

37  
Rb  
Рубидий  
85.47

38  
Sr  
Стронций  
87.62

39  
Y  
Иттрий  
88.91

40  
Zr  
Цирконий  
91.22

41  
Nb  
Нобий  
92.91

42  
Mo  
Молибден  
95.94

43  
Tc  
Технеций  
98.91

44  
Ru  
Рутений  
101.07

45  
Rh  
Родий  
102.91

46  
Pd  
Палладий  
106.38

47  
Ag  
Серебро  
107.87

48  
Cd  
Кадмий  
112.41

49  
In  
Индий  
114.82

50  
Sn  
Олово  
118.71

51  
Sb  
Сурьма  
121.76

52  
Te  
Теллур  
127.60

53  
I  
Иод  
126.91

54  
Xe  
Ксенон  
131.29

55  
Cs  
Цезий  
132.91

56  
Ba  
Барий  
137.33

57-71  
Lanthanoids

72  
Hf  
Гафний  
178.49

73  
Ta  
Тантал  
180.95

74  
W  
Вольфрам  
183.85

75  
Re  
Рений  
186.21

76  
Os  
Осмий  
190.23

77  
Ir  
Иридий  
192.22

78  
Pt  
Платина  
195.08

79  
Au  
Золото  
196.97

80  
Hg  
Ртуть  
200.59

81  
Tl  
Таллий  
204.38

82  
Pb  
Свинец  
207.19

83  
Bi  
Висмут  
208.98

84  
Po  
Полоний  
209

85  
At  
Астат  
210

86  
Rn  
Радон  
222

87  
Fr  
Франций  
223

88-103  
Actinoids

104  
Rf  
Рифмий  
261

105  
Db  
Дубний  
262

106  
Sg  
Сивогий  
266

107  
Bh  
Борий  
264

108  
Hs  
Хасий  
265

109  
Mt  
Мейтнерий  
268

