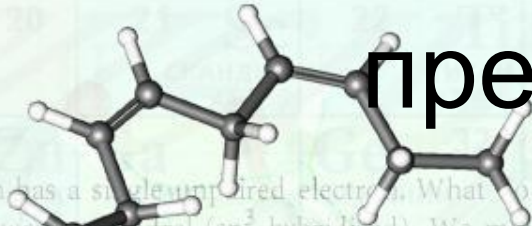


# Шаблон для презентации



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 the single electron 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 could be spread over the molecule in the same orbital that contained the cation.



inefficient overlap of  $sp^3$  orbital and  $\pi$  bond



So once again we have the same orbitals to share the same electrons, 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.



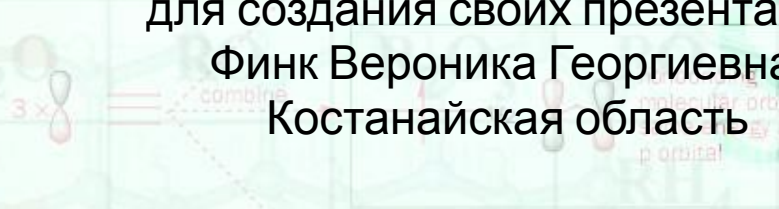
efficient overlap of  $p$  orbital and  $\pi$  bond

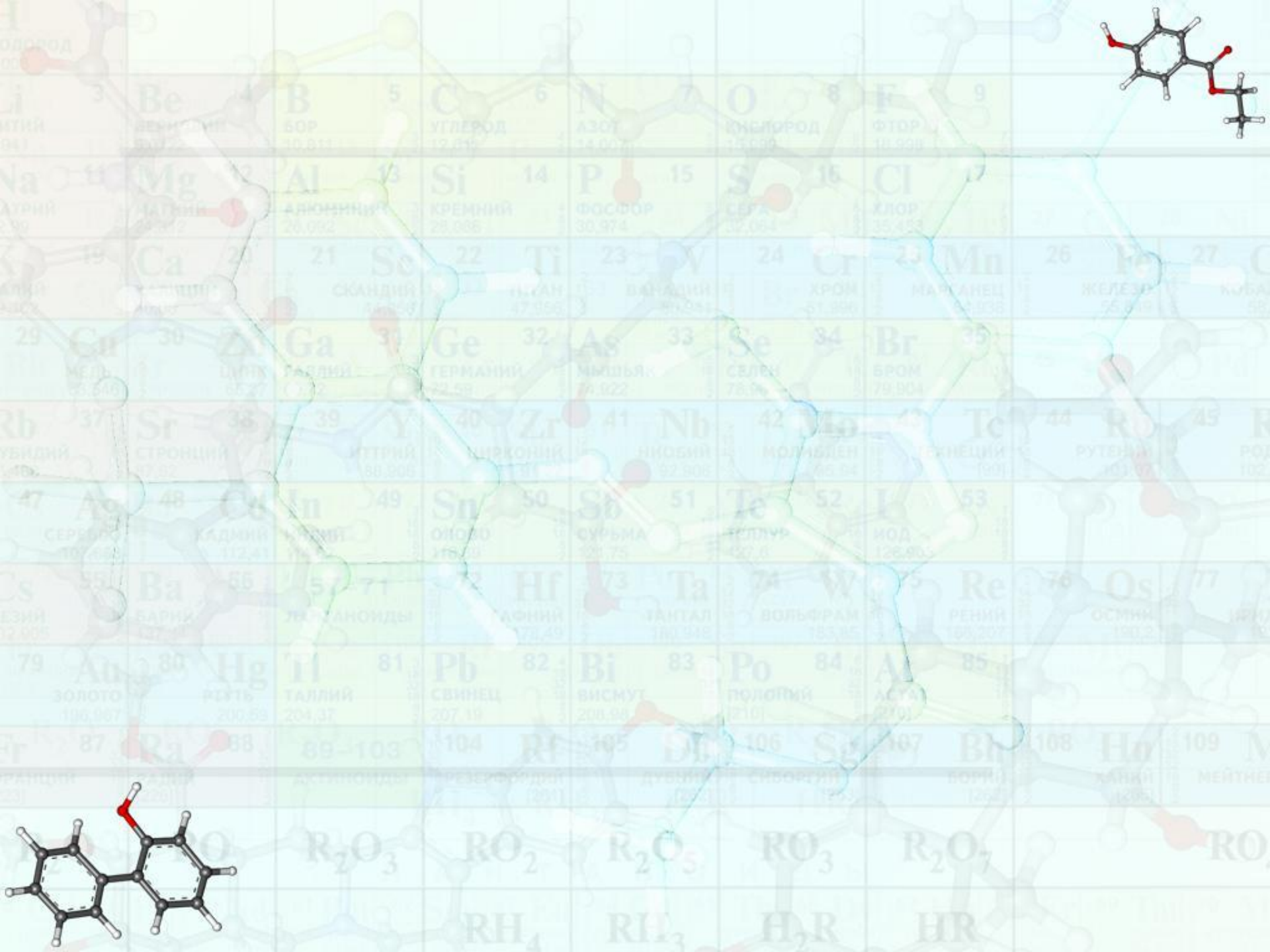
Вы можете использовать данное оформление для создания своих презентаций.

Финк Вероника Георгиевна,  
Костанайская область

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

g energy of orbitals





1  
H  
Водород  
1.008

2  
He  
Гелий  
4.003

3  
Li  
Литий  
6.941

4  
Be  
Бериллий  
9.012

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  
20.180

11  
Na  
Натрий  
22.990

12  
Mg  
Магний  
24.305

13  
Al  
Алюминий  
26.982

14  
Si  
Кремний  
28.086

15  
P  
Фосфор  
30.974

16  
S  
Сера  
32.064

17  
Cl  
Хлор  
35.453

18  
Ar  
Аргон  
39.948

19  
K  
Калий  
39.098

20  
Ca  
Кальций  
40.078

21  
Sc  
Скандий  
44.956

22  
Ti  
Титан  
47.867

23  
V  
Ванадий  
50.942

24  
Cr  
Хром  
51.996

25  
Mn  
Марганец  
54.938

26  
Fe  
Железо  
55.845

27  
Co  
Кобальт  
58.933

28  
Ni  
Никель  
58.693

29  
Cu  
Медь  
63.546

30  
Zn  
Цинк  
65.38

31  
Ga  
Галлий  
69.723

32  
Ge  
Германий  
72.63

33  
As  
Мышьяк  
74.922

34  
Se  
Селен  
78.96

35  
Br  
Бром  
79.904

36  
Kr  
Криптон  
83.80

37  
Rb  
Рубидий  
85.468

38  
Sr  
Стронций  
87.62

39  
Y  
Иттрий  
88.906

40  
Zr  
Цирконий  
91.224

41  
Nb  
Ниобий  
92.906

42  
Mo  
Молибден  
95.94

43  
Tc  
Технеций  
98

44  
Ru  
Рутений  
101.07

45  
Rh  
Родий  
102.905

46  
Pd  
Палладий  
106.36

47  
Ag  
Серебро  
107.868

48  
Cd  
Кадмий  
112.411

49  
In  
Индий  
114.818

50  
Sn  
Олово  
118.710

51  
Sb  
Сурьма  
121.757

52  
Te  
Теллур  
127.6

53  
I  
Иод  
126.905

54  
Xe  
Ксенон  
131.29

55  
Cs  
Цезий  
132.905

56  
Ba  
Барий  
137.327

57-71  
Lanthanoids

72  
Hf  
Гафний  
178.49

73  
Ta  
Тантал  
180.948

74  
W  
Вольфрам  
183.85

75  
Re  
Рений  
186.207

76  
Os  
Осмий  
190.2

77  
Ir  
Иридий  
192.22

78  
Pt  
Платина  
195.084

79  
Au  
Золото  
196.967

80  
Hg  
Ртуть  
200.59

81  
Tl  
Таллий  
204.37

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  
Хассий  
277

109  
Mt  
Мейтнерий  
276

110  
Ds  
Дэбний  
285

111  
Rg  
Роговий  
288

112  
Cn  
Коперниций  
285

113  
Nh  
Нихоний  
286

114  
Fl  
Флеровий  
289

115  
Mc  
Макгейтлий  
288

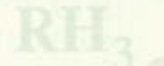
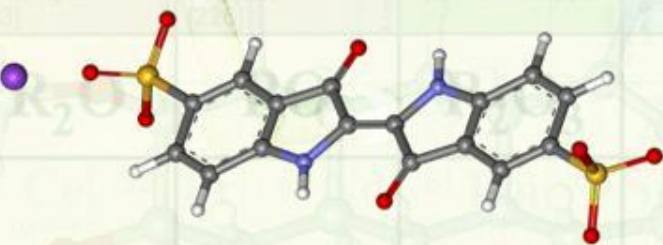
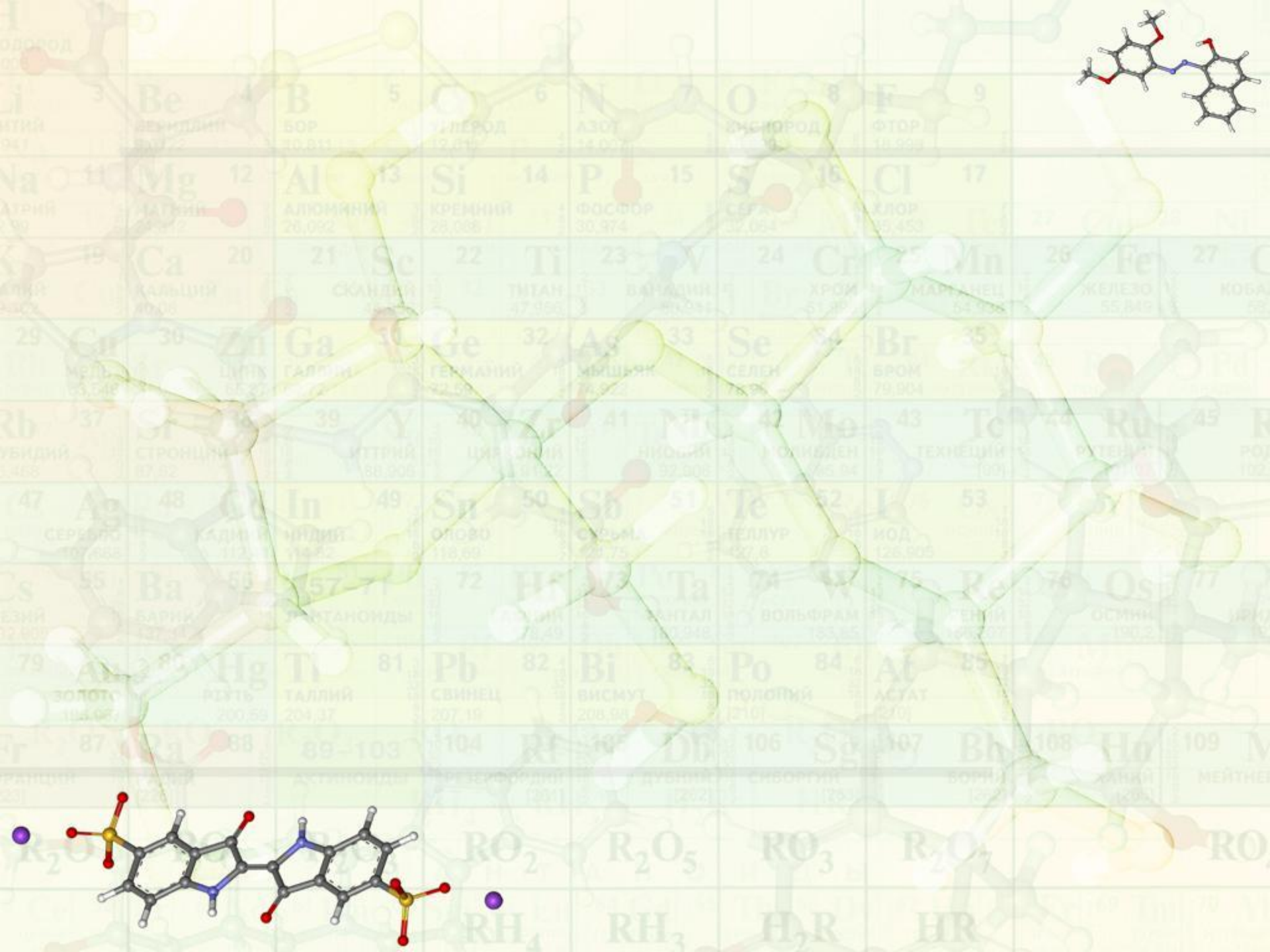
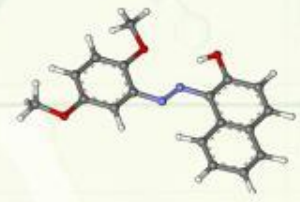
116  
Lv  
Ливерморий  
293

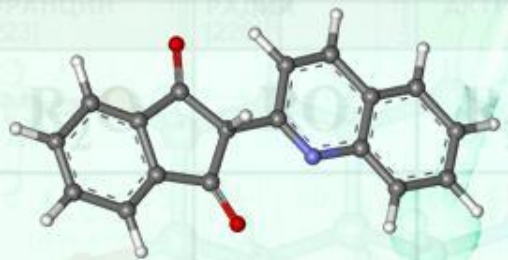
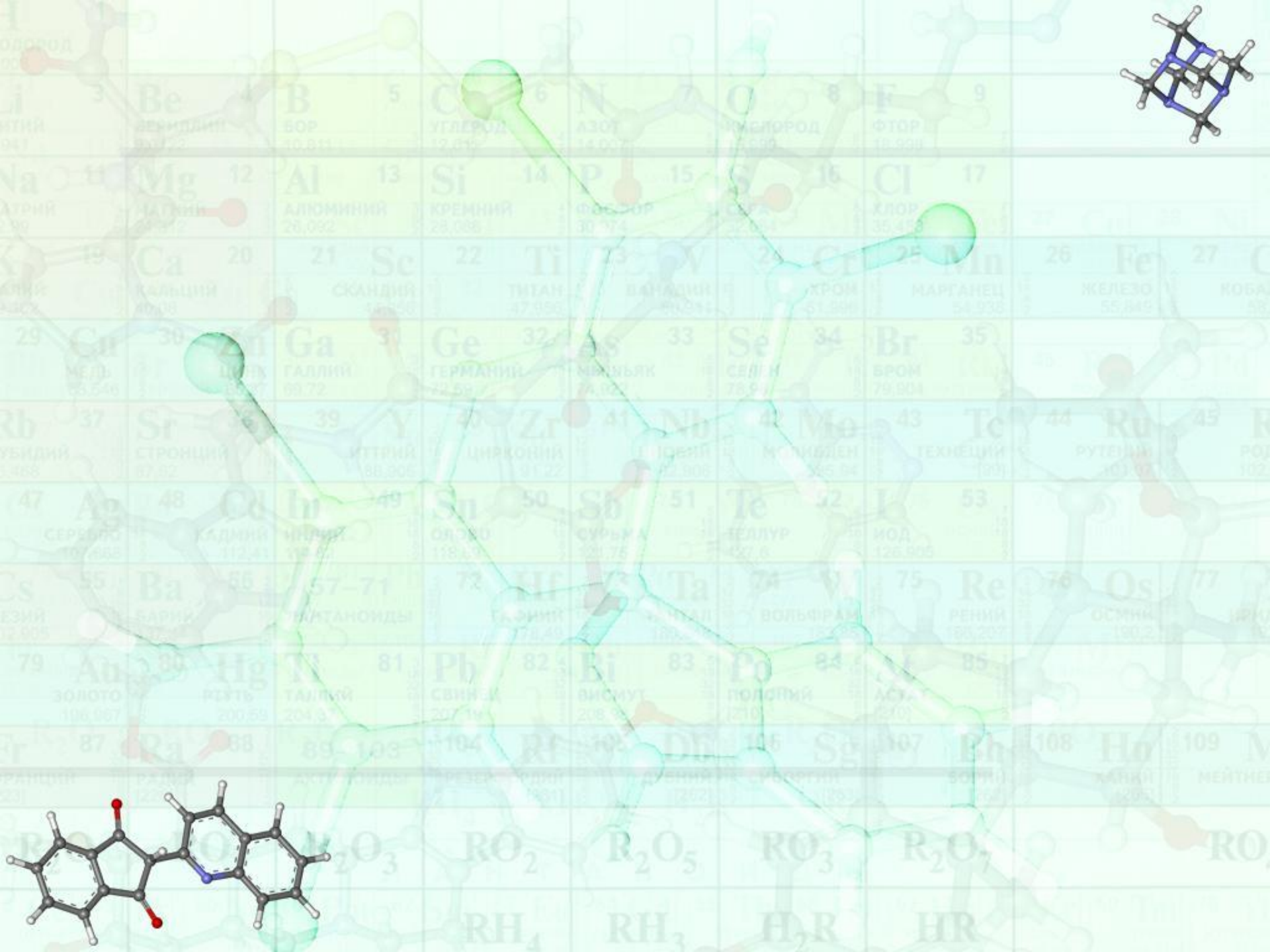
117  
Ts  
Теннессиум  
289

118  
Og  
Оганесон  
294









1 Li  
3 Na  
11 K  
19 Rb  
37 Cs  
55 Fr

2 Be  
4 Mg  
12 Ca  
20 Sr  
38 Ba  
56 Ra

3 B  
5 Al  
13 Ga  
31 In  
49 Tl

4 C  
6 Si  
14 Ge  
32 Sn  
50 Pb

5 N  
7 P  
15 As  
33 Sb  
51 Bi

6 O  
8 S  
16 Se  
34 Te  
52 Po

7 F  
9 Cl  
17 Br  
35 I  
53 At

8 Ne  
10 Ar  
18 Kr  
36 Xe  
54 Rn

9 He  
18 Ne  
26 Fe  
34 Se  
42 Mo  
50 Sn  
58 Ce  
66 Dy  
74 W  
82 Pb  
90 Th  
98 Cf

10 He  
18 Ne  
26 Fe  
34 Se  
42 Mo  
50 Sn  
58 Ce  
66 Dy  
74 W  
82 Pb  
90 Th  
98 Cf

RO<sub>2</sub>

RO<sub>2</sub>

R<sub>2</sub>O<sub>5</sub>

RO<sub>3</sub>

R<sub>2</sub>O<sub>7</sub>

RO<sub>2</sub>

HR

HR

RO<sub>2</sub>

RO<sub>2</sub>

