# THE EFFECTIVENESS OF EXPLAINED THE CONTENT OF THE SUBJECT OF HYBRIDIZATION TO STUDENTS IN SCHOOL LESSONS

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**Abstract:** *In this article, there is very little information on the topic of hybridization in school textbooks, and explaining to students how substances combine creates several difficulties. It is in this article that I commented on several concepts related to the topic of hybridization in school textbooks in order to make students use more information and enrich their knowledge.*

***Key words****: Hybridized and not hybridized orbitals , Hybridization , To each other similar Energetic , Visual , Valent orbitals , π - bonds , Atomic orbitals , Molecule , Energy stable, School in the textbook , Hybridization types , Fig and to energy , Similar shaped.*

The subject of hybridization is only briefly covered in school textbooks, and resources on the topic of hybridization are rare even in most textbooks. In this article, I tried to provide more information to cover the topic of hybridization in school textbooks.

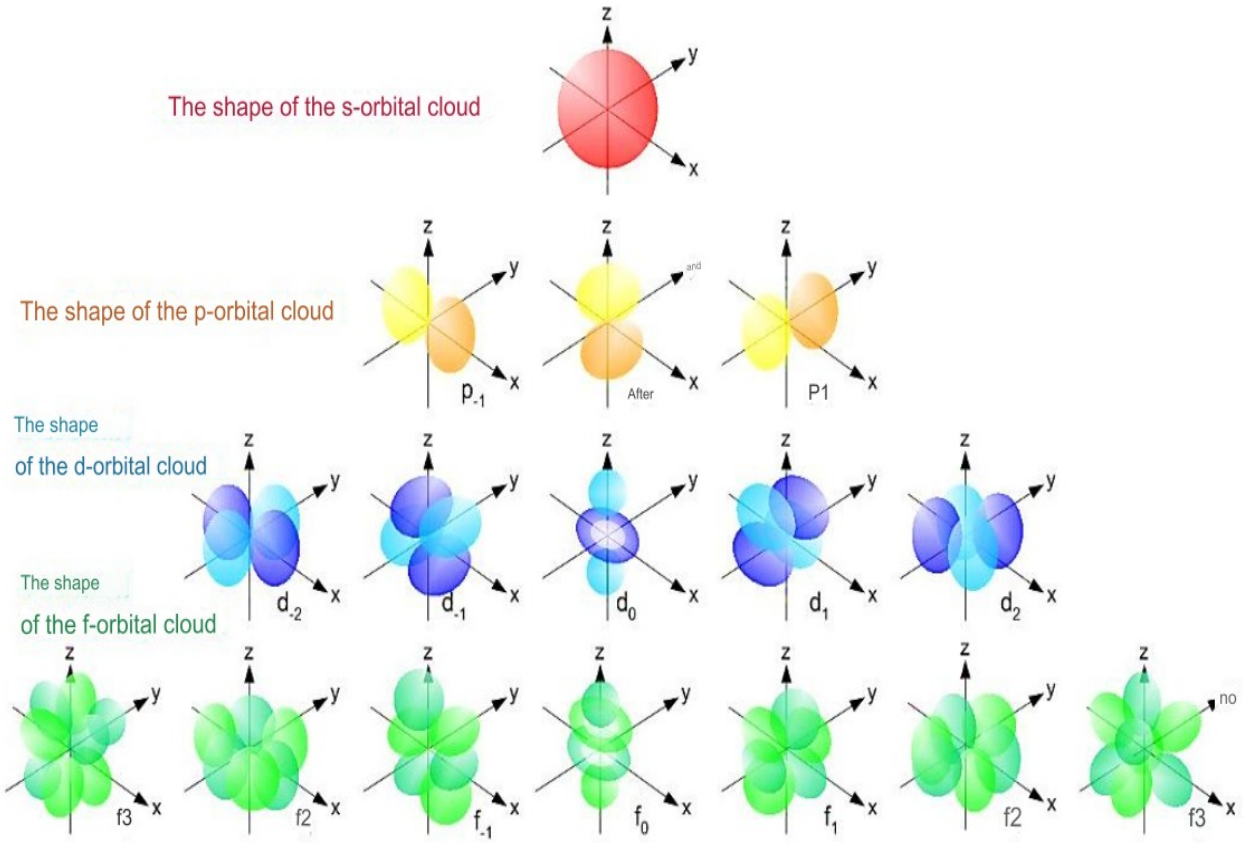
In order to clarify the topic of hybridization, I have formulated the following questions for myself, and by answering these questions, I will provide step-by-step information to you, the users of the article.

1. What is hybridization?
2. What types of hybridization are there?
3. What do you know about the stages of hybridization?
4. How is hybridization formed?

5. What do you know about hybridized and non-hybridized orbitals?

There is very little information on the topic of hybridization in school textbooks, and explaining to students how substances combine creates several difficulties. Let's answer questions like what is hybridization and how does it work in this article.

**Hybridization is:** The process of atomic orbitals of different shapes and energies combining or interacting with each other to become atomic orbitals of the same energy and similar shape is called hybridization (a visual (picture) of this is given below) given the concept).




The reason for hybridization is the tendency of hybrid orbitals formed from atomic orbitals to form a molecule and cover each other, to strengthen the chemical bond, and to make the molecule energetically stable.

The theory of hybridization of valence orbitals was developed in 1934 by J.Slater and L.Poling.

$\sigma$ -bonds are involved in hybridization .

$\pi$ bonds do not participate in hybridization.

Electron clouds of the above atomic orbitals are involved in the formation of hybridization.

Now let 's get acquainted with the general formation schemes of hybridization

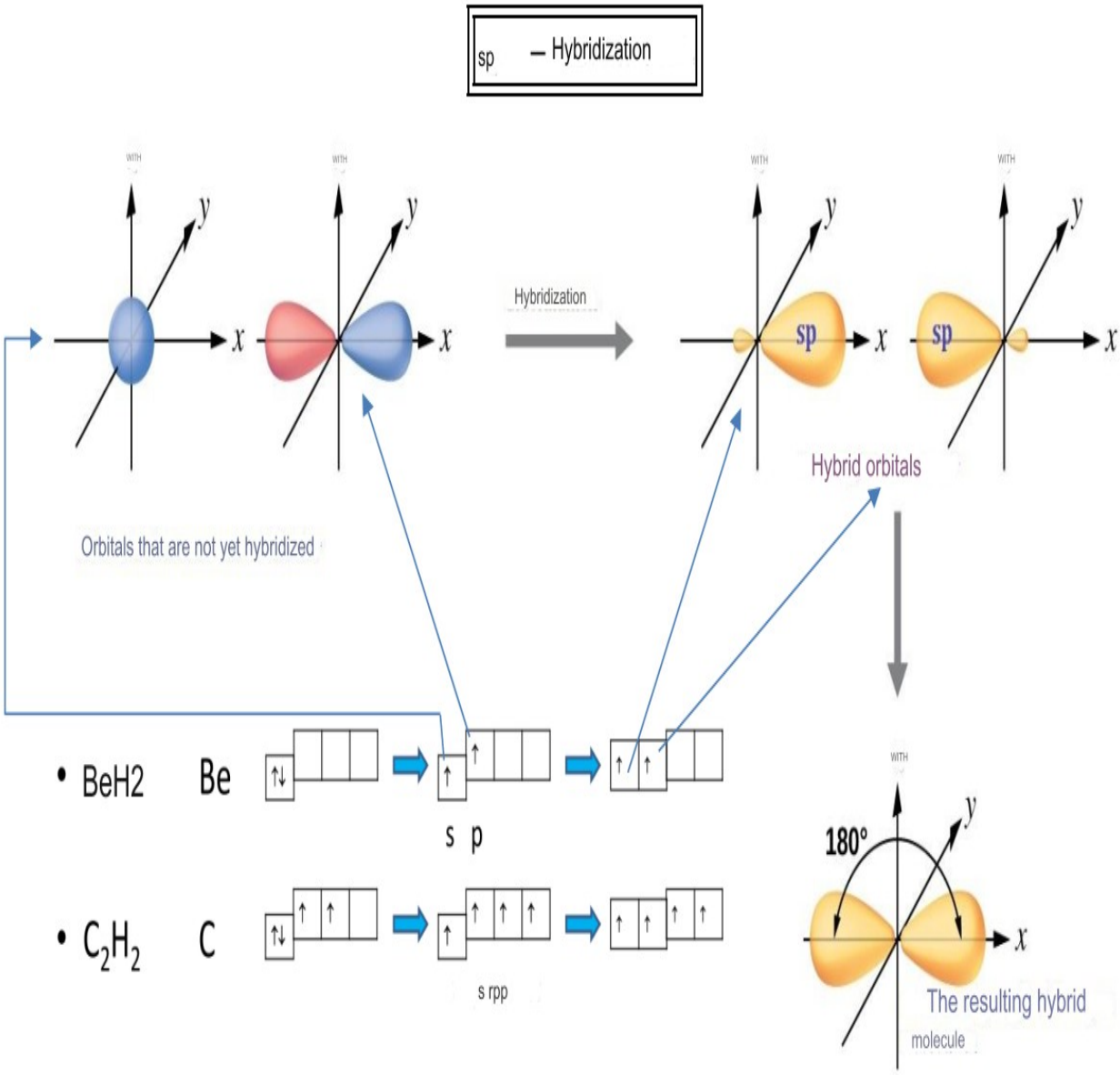
Hybridization stages :

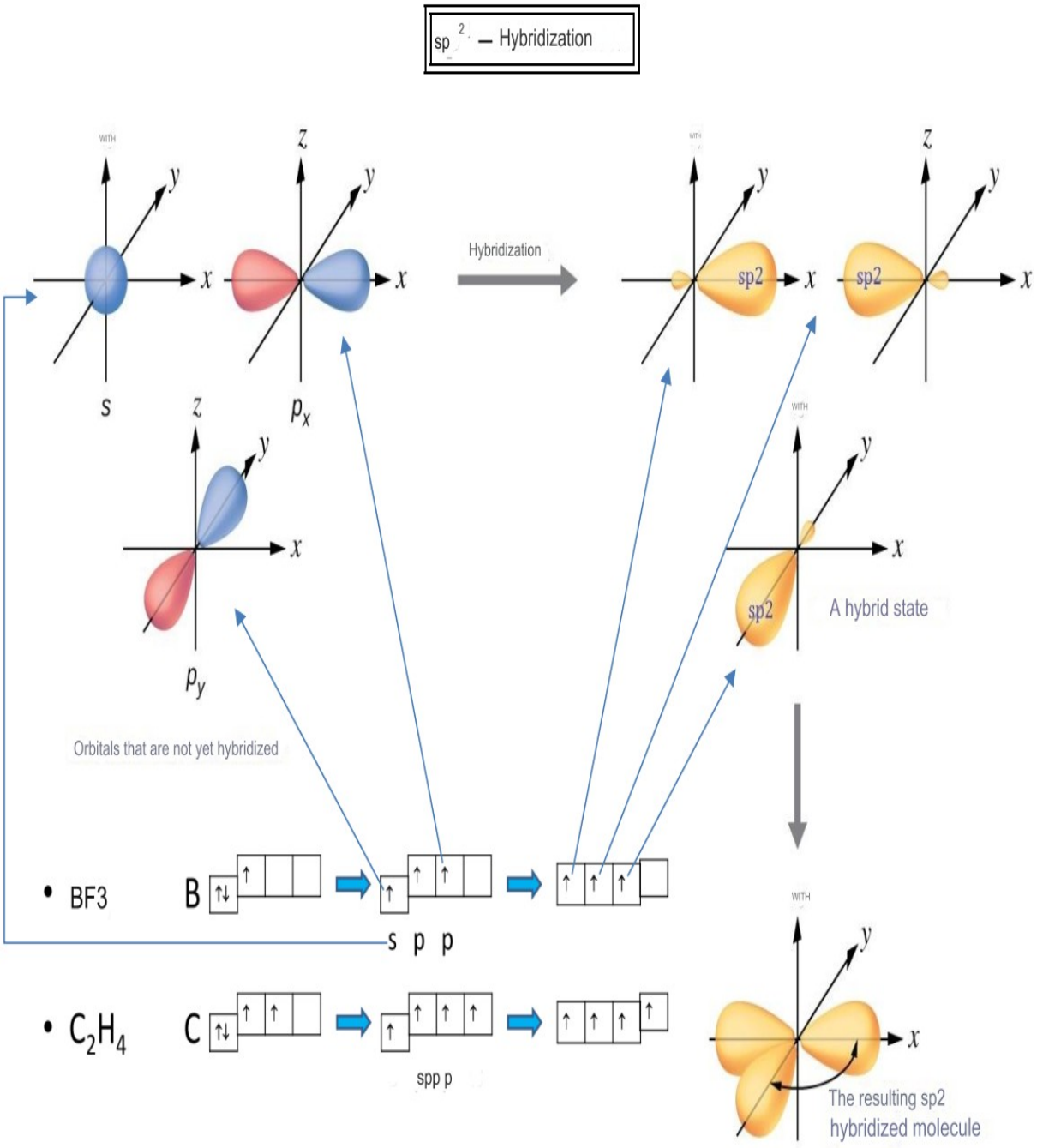
1- In hybridization, the electrons in the atom first move to an excited state.

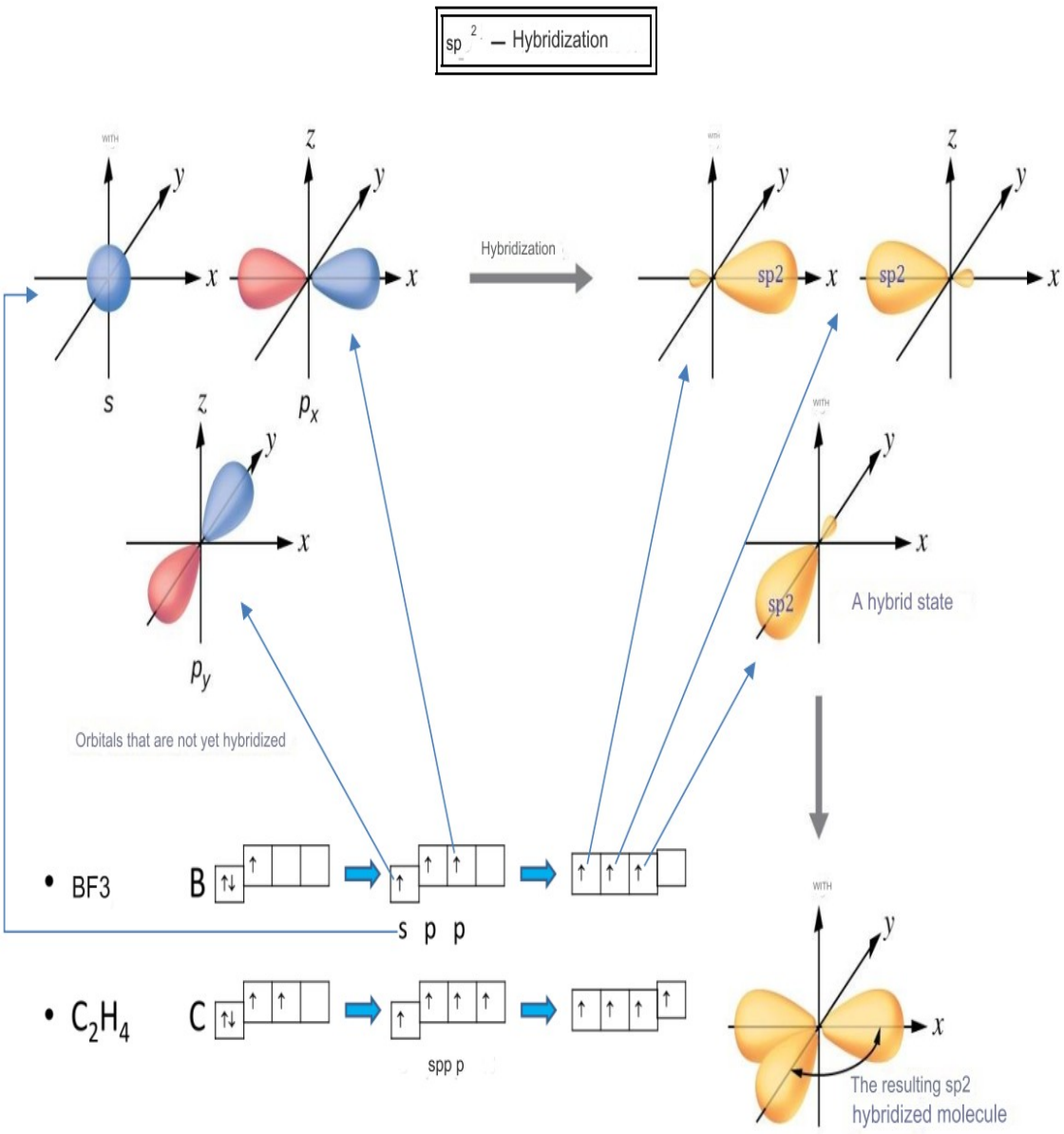
2- In the phase, the orbitals participating in the hybridization interact and form the same hybrid orbitals.

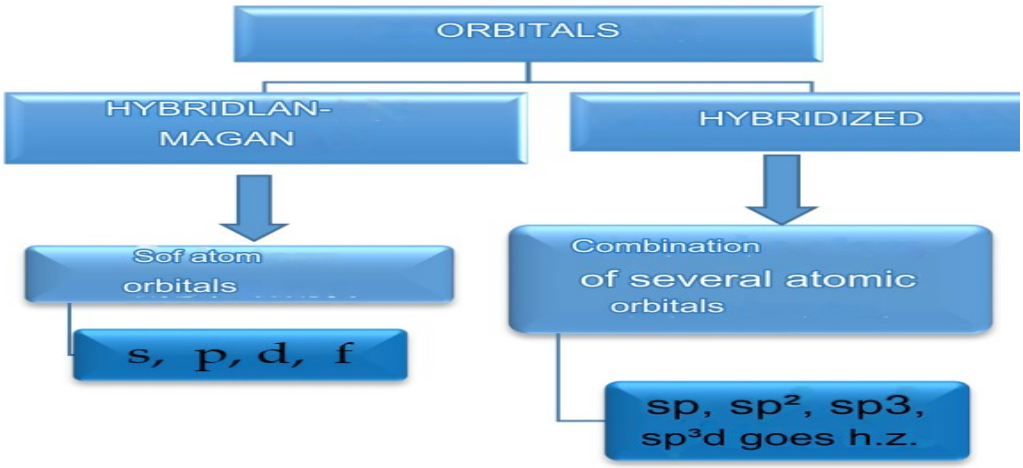
3- In the stage, the formed hybrid orbitals interact to form a hybridized molecule.

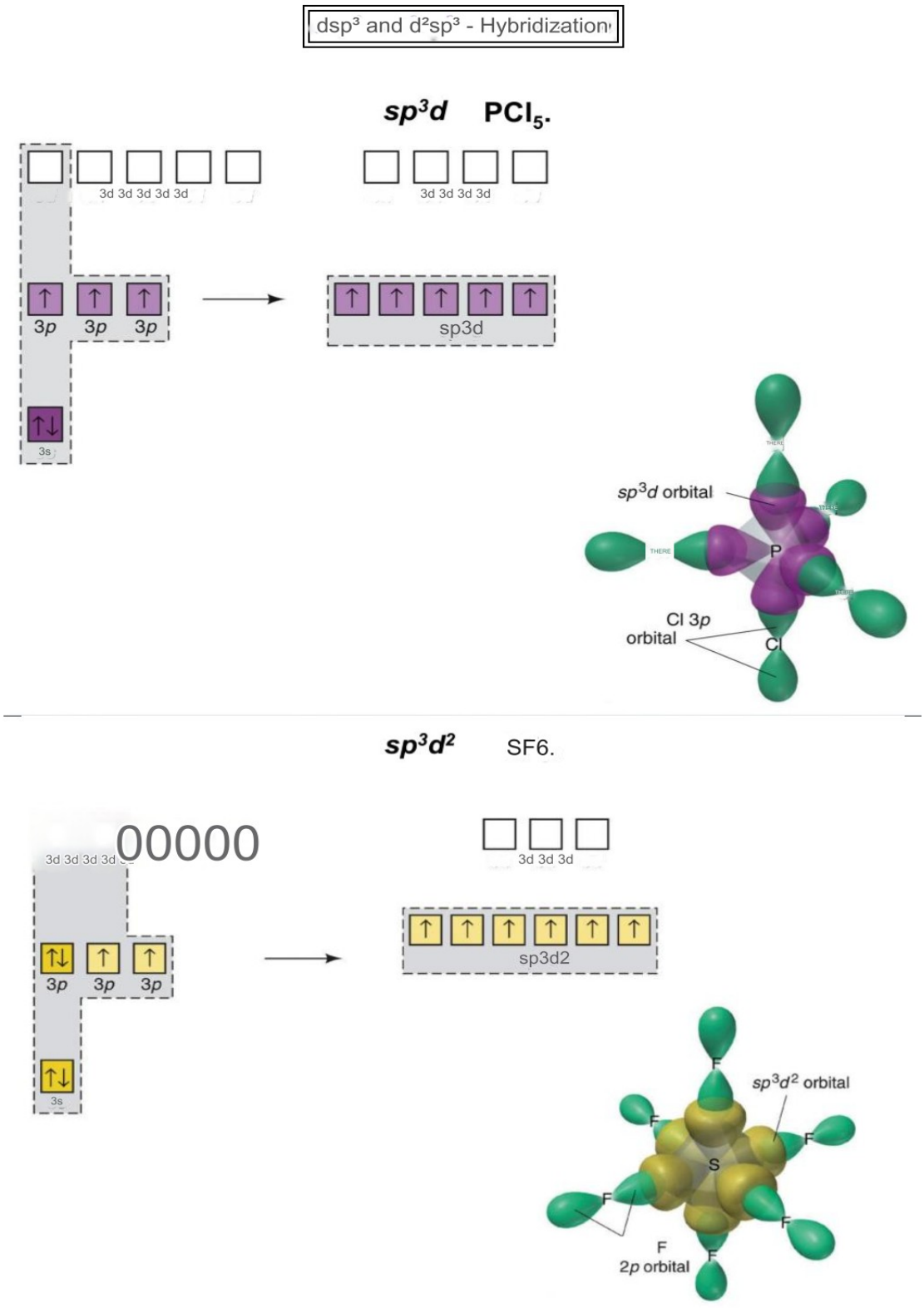
The mechanism of hybridization is presented in a visual way


sp – Hybridization
Hybridization
sp
sp
Hybrid orbitals
Orbitals that are not yet hybridized
• BeH2 Be
s p
• C2H2 C
s rpp
180°
The resulting hybrid
molecule


sp 2 – Hybridization
Hybridization
s
$p_x$
$p_y$
sp2
sp2
sp2
A hybrid state
Orbitals that are not yet hybridized
• BF3
B
s p p
• $C_2H_4$
C
spp p
The resulting sp2 hybridized molecule


sp 2 – Hybridization
Hybridization
sp2
sp2
s
$p_x$
$p_y$
sp2
A hybrid state
Orbitals that are not yet hybridized
• BF3
B
s p p
• $C_2H_4$
C
spp p
The resulting sp2
hybridized molecule


ORBITALS
HYBRIDLAN-
MAGAN
HYBRIDIZED
Sof atom
orbitals
Combination
of several atomic
orbitals
s, p, d, f
sp, sp², sp3,
sp³d goes h.z.




Regarding hybridized and non-hybridized orbitals , we must first distinguish between two different types of orbitals:

If the above information is used in teaching the subject of hybridization in a school textbook, it will help students to imagine how substances are combined with each other and increase their views and knowledge about the properties of substances and their structure.

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