

# 48) Química Geral para Ciências Biológicas (QGB)

## Módulo 2

### Módulo 2: Funções inorgânicas (Kotz: 2.5 e 2.6)

#### 1.1 Ions monoatômicos

• Ions: Átomos com excesso (ânions) ou falta (cátions) de elétrons.

↳ Tendência: Metais (1A, 2A e 3A) PERDEM  $e^-$

Ametais (5A, 6A e 7A) GANHAM  $e^-$

↳ Junção de dois ou mais íons: ligação iônica → SAL

<u>Família</u>	<u><math>e^-</math> VALÊNCIA</u>	<u>ÍON</u>	<u>Carga</u>
1A	1	Cátion	$1A \rightarrow 1A^+ + e^-$
2A	2	Cátion	$2A \rightarrow 2A^{2+} + 2e^-$
3A <sup>*</sup>	3	Cátion	$3A \rightarrow 3A^{3+} + 3e^-$
5A	5	Ânion	$5A + 3e^- \rightarrow 5A^{3-}$
6A	6	Ânion	$6A + 2e^- \rightarrow 6A^{2-}$
7A	7	Ânion	$7A + e^- \rightarrow 7A^-$

• Exceção: H pode formar  $H^+$  ou  $H^-$ !

→ Nomenclatura:

a. Cátion monoatômico (1A, 2A e 3A): "Cátion [elemento]"

ex.:  $Al^{3+}$ : Cátion alumínio,  $Na^+$ : Cátion sódio

b. Cátion monoatômico (metal de transição): "Cátion [elemento] ([nox - algarismo romano])"

ex.:  $Co^{3+}$ : Cátion cobalto (III),  $Fe^{2+}$ : Cátion ferro (II)

c. Ânion monoatômico: "ânion [elemento\*]eto"

ex.:  $H^-$ : ânion hidreto

$F^-$ : ânion fluoreto

$P^{3-}$ : ânion fosfeto

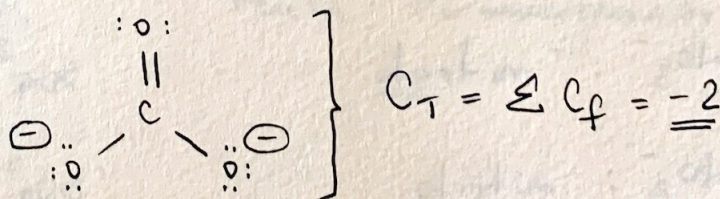
$S^{2-}$ : ânion sulfeto

$N^{3-}$ : ânion nitreto

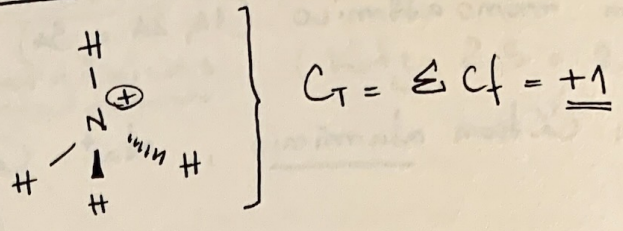
$O^{2-}$ : ânion óxido (exceção!)

2. Íons poliatômicos → partícula carregada com dois ou mais átomos ligados

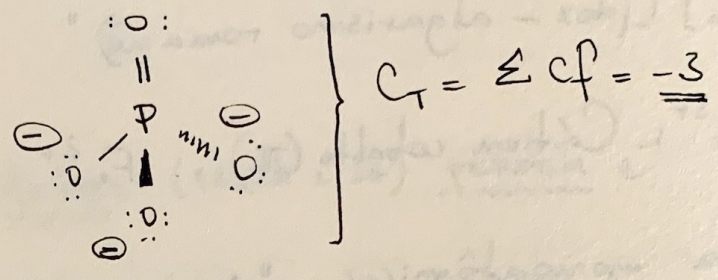
ex.:  $CO_3^{2-}$  → íon carbonato (ânion)



EX.:  $\text{NH}_4^+$  → ion amônio (cátion)



ex.:  $\text{PO}_4^{3-}$  → ion fosfato (ânion)



Importante: O carbonato ( $\text{CO}_3^{2-}$ ), fosfato ( $\text{PO}_4^{3-}$ ) e outros ânions contendo oxigênio são chamados de oxoânions.

↳ Orientações gerais:

a. Série de oxoânions com 2 membros:

Mais oxigenado: terminação "ato"

Menos oxigenado: terminação "ito"

ex.:  $\text{NO}_3^-$  : nitrato

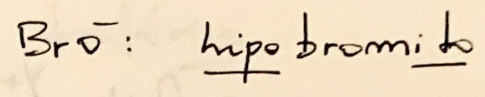
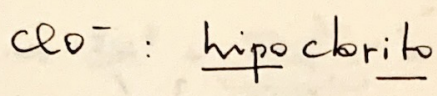
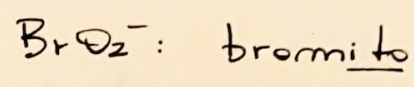
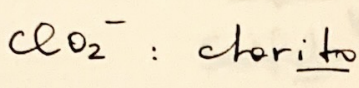
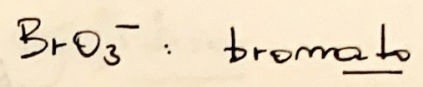
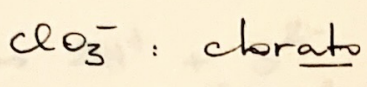
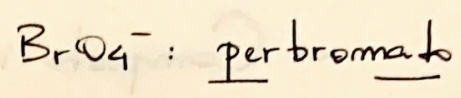
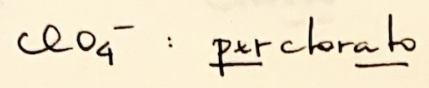
$\text{SO}_4^{2-}$  : sulfato

$\text{NO}_2^-$  : nitrito

$\text{SO}_3^{2-}$  : sulfito

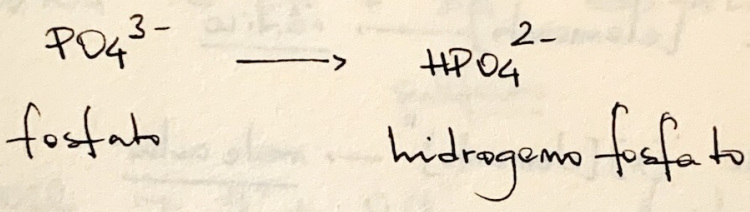
b. Série de oxoânions com mais de 2 membros:

ex.:

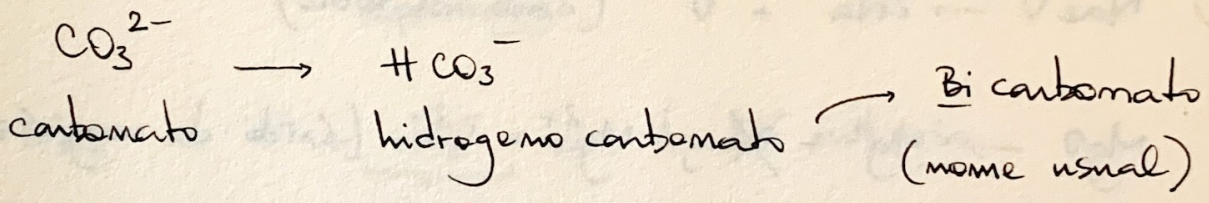


c. Oxoânions hidrogenados: "hidrogeno[ânion]"

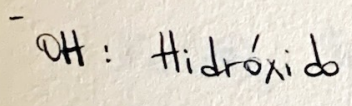
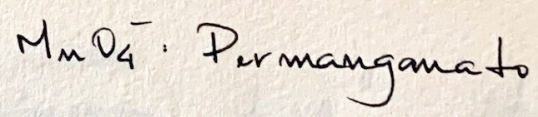
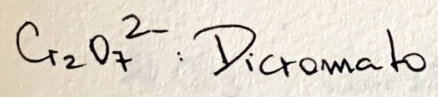
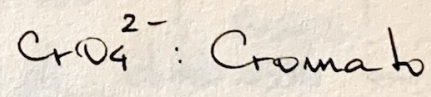
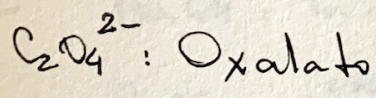
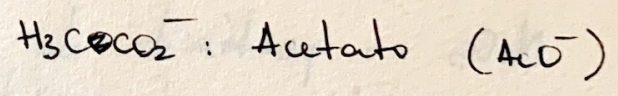
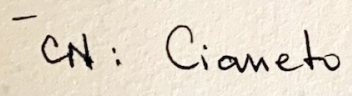
ex.:



ex.:

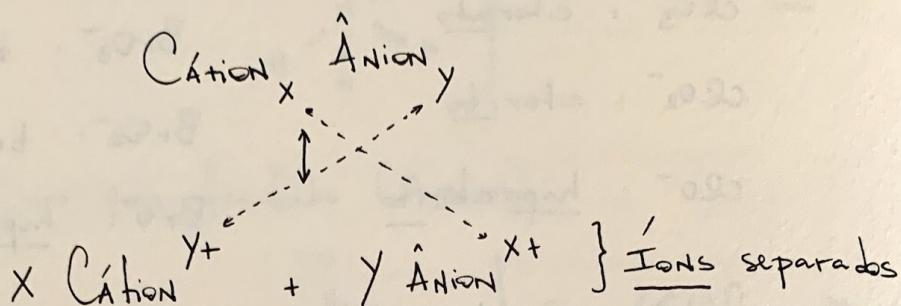


↳ Outros ânions poliatômicos importantes:



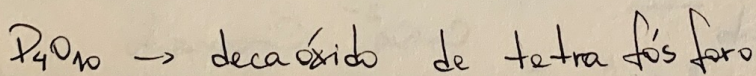
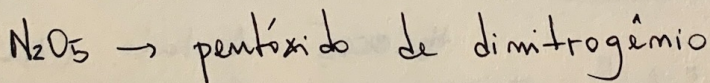
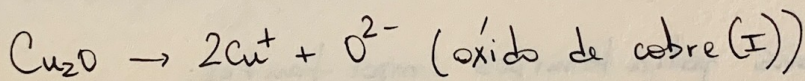
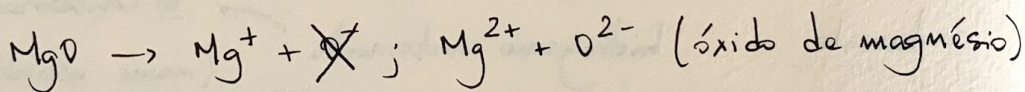
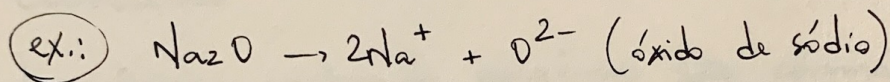
52 [3.1] Nomenclatura

→ Composto iônico:



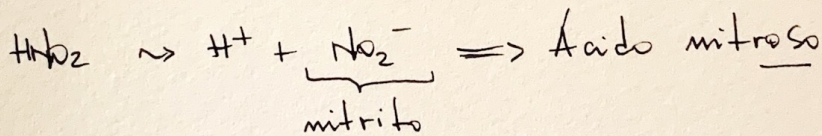
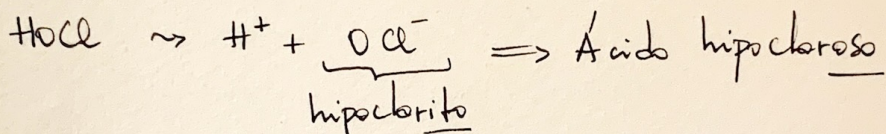
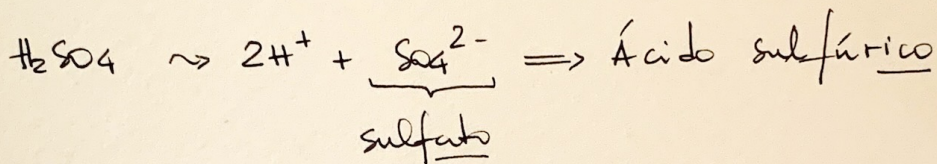
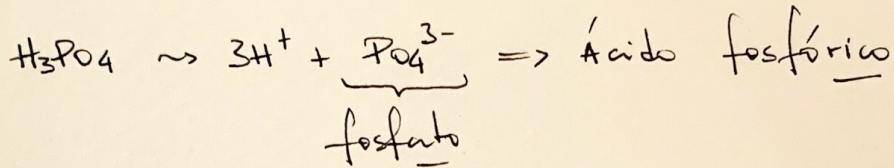
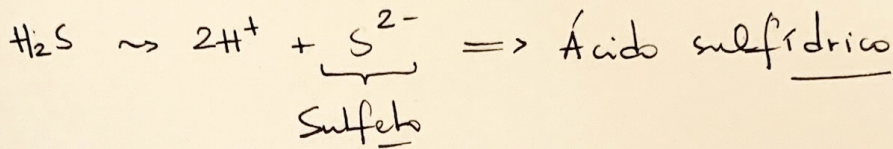
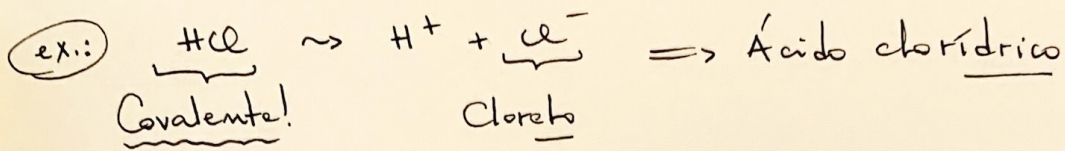
1. Óxidos: "Óxido de [elemento]" → iônico

"~~x~~<sup>y</sup> óxido de [x][elemento]" → molecular

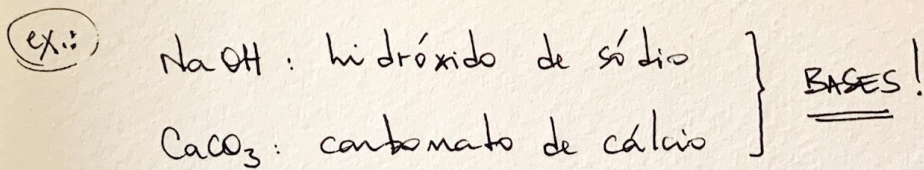


2. Ácidos: "Ácido (memômica)"

ânion	ácido
ito	oso
ato	ico
eto	ídrico



3. Bases e sais: "[ânion] de [cátion]"



$AlCl_3$ : cloro de alumínio

$Fe(OH)_3$ : hidróxido de ferro(III)

$AgNO_3$ : nitrato de prata (I)

$Na_2SO_4$ : sulfato de sódio