

Nomenclature Worksheet 3: **Naming of Transition metal salts**

Like all metals, when transition metals combine with a nonmetal they form ionic compounds. They differ from the Group A elements in that they can form cations with different charges. For example **iron** can form both  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  ions. Because of this the charge (or oxidation state) of the metal in the compound is usually included in the name. This is done by writing the oxidation state as a roman numeral in parentheses directly following the name of the element. Sometimes older nomenclature is used where the lower oxidation state is given an “ous” ending, the higher is given an “ic” ending. For Chem 111 you should use the roman numeral (IUPAC) method.

	IUPAC Name	Older name
$\text{Fe}^{2+}$	iron(II) ion	Ferrous ion
$\text{Fe}^{3+}$	iron(III) ion	Ferric ion

The charge for certain elements is so common that it is often not stated. Here are some exceptions:

	Accepted Name	IUPAC Name
$\text{Ni}^{2+}$	nickel ion	nickel(II) ion
$\text{Cu}^{2+}$	copper ion	copper(II) ion
$\text{Ag}^{+}$	silver ion	silver(I) ion
$\text{Zn}^{2+}$	zinc ion	never written as zinc(II)

In addition to the transition metals, the Group 4A metals tin and lead can have +2 or +4 oxidation states. These are specified in the same manner: lead(IV), tin(II) and tin(IV).  $\text{Pb}^{2+}$  is just called lead ion.

Name of compound	Formula of compound
1. chromium(II) chloride	
2. copper(I) oxide	
3. cobalt(II) sulfide	
4. silver bromide	
5. iron(II) nitride	
6. copper fluoride	
7. zinc iodide	
8. lead(IV) oxide	
9. tin(II) chloride	
10. manganese(III) oxide	
11.	$\text{SnF}_2$
12.	$\text{CuS}$
13.	$\text{Zn}_3\text{P}_2$
14.	$\text{NiBr}_2$
15.	$\text{CrO}$
16.	$\text{AgI}$
17.	$\text{FeCl}_3$
18.	$\text{Co}_2\text{O}_3$
19.	$\text{PbS}$
20.	$\text{Ag}_2\text{S}$