

Mineralogy Homework Assignment #3 – Chemical Analyses and Ternary Diagrams**Due Monday, February 24, 2003**

You may answer these questions on the back of this sheet, or if you do them on another sheet, be sure to attach it. Show your work in your calculations! See p. 94-103 for assistance.

- A complete solid solution exists between Jadeite (Jd; $\text{NaAlSi}_2\text{O}_6$) and Diopside (Di; $\text{CaMgSi}_2\text{O}_6$). Pyroxenes with compositions intermediate between Jadeite and Diopside are known as "Omphacites" and occur in some metamorphic rocks. Give the chemical formula for an Omphacite of composition $\text{Di}_{65}\text{Jd}_{35}$, in terms of:
 - A pyroxene chemical formula based on six Oxygens
 - Wt. % component oxides (e.g. – SiO_2 , MgO , Al_2O_3 , etc.).
- You perform a chemical analysis on a garnet and learn that its composition is $\text{Alm}_{66.8}\text{Py}_{27.2}\text{Sp}_{6.0}$.
 - Plot this composition on the ternary diagram below.
 - Determine the chemical formula for this garnet based on 12 Oxygens.
 - Calculate the wt. % of all the individual component oxides for this garnet (e.g. – SiO_2 , MgO , Al_2O_3 , etc.).



