# What's in a meteorite?

***Education in Chemistry***
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**Meteorites give us clues about the elements present on other planets. This worksheet explores some data on the compounds found in meteorites.**

The data shown in the table give the % concentration of different compounds in the Dhofar 007 meteorite, a 21 kg meteorite that fell in Oman in 1999. For easier reference, each compound has been given a letter from A–M. Other trace elements were also present and these make up the remaining %.

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Compound | $SiO_2$ | $TiO_2$ | $Al_2O_3$ | $Cr_2O_3$ | FeO | MnO | MgO | CaO | $Na_2O$ | $K_2O$ | $P_2O_5$ | $H_2O$ | FeS |
| % concentration | 46.70 | 0.31 | 11.70 | 0.37 | 14.80 | 0.48 | 10.20 | 10.50 | 0.53 | 0.01 | 0.06 | 0.21 | 3.94 |

1. Circle the letters of the compounds which are made up of only non-metal elements.

   **ADK** **AKL** **DKL** **DHK**

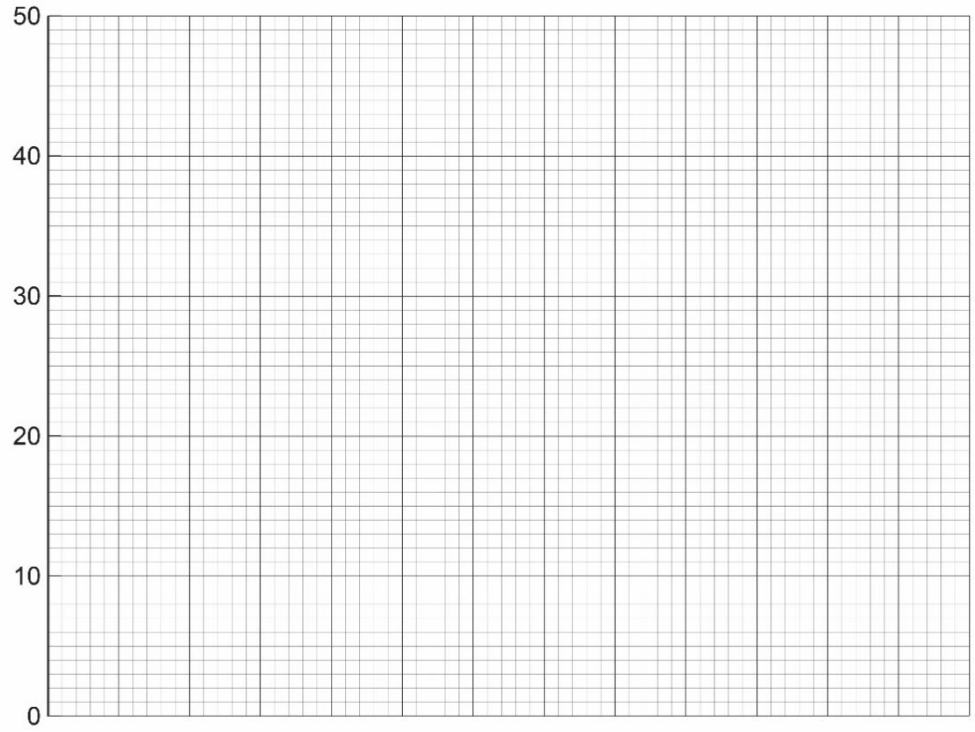
2. Give the letter of the compound which is present in the smallest percentage concentration. ☐

3. Give the letter of the compound which is not an oxide. ☐

4. Give the letters of the six most abundant compounds in the meteorite.

   _____ _____ _____ _____ _____ _____

5. Complete the bar chart to show the % concentration of the six most abundant compounds.

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6. Why is a bar chart the best type of graph to show the % concentration of the six most abundant compounds?

_____

_____

_____

_____

7. What is the most abundant element in the meteorite? _____

   Explain your answer. _____

_____

_____

Trace elements are elements that are present in tiny amounts. The most abundant trace element in the meteorite is nickel which has a quoted measurement of 870 ppm. The unit ppm means 'parts per million' so there are 870 particles of nickel in every million particles.

8. Convert the ppm measurement for nickel to % and suggest why ppm is a useful way of showing the data for trace elements.

   Conversion:

   Reason: _____

_____

_____

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