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MASS-SPECTROMETRIC METHODS IN ISOTOPE GEOLOGY

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Isotope geology-the scientific branch based on the mass-spectrometric studies of natural concentration of stable isotopes of some elements - is little known among the chemists. Considering its wide possibilities I'd like to pass you some information relating to this branch.

I. Isotope geochemistry - measurements of the variations of the stable isotopes H,C,N,O,S in natural materials. This method is for example used:
- in the geochemistry of ore-deposits, i.e. the determination of the source of H,O,C,S in hydrothermal solutions, the estimation of crystallization temperatures of minerals,
- in the geochemistry of sediments, i.e. the calculation of water temperatures in ancient oceans,
- in the environmental sciences, ie. determination of the source of pollutions.

II. Geochronology methods - mass-spectrometric measurements of a stable daughter elements generated by a radioactive decay of a radioactive parents, for example

$^{87}_{37}Rb \longrightarrow {}^{87}_{38}Sr + \beta^- + \bar{\nu} + Q$, where ^{87}Rb is radioactive and decays to stable ^{87}Sr. The other used dating methods /e.g. K-Ar,U-Pb,Nd-Sm/ are based on the same principles as above mentioned Rb-Sr method. All of dating methods are used to age determinations of the rocks from Earth,Moon and meteorites.