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X-ray satellite

Also contains definitions of: hypersatellite *in X-ray spectroscopy*, multiple ionization satellite *in X-ray spectroscopy* , non-diagram line *in X-ray spectroscopy*

A weak line in the same energy region as a normal X-ray line. Another name used for weak features is non-diagram line. Recommendations as to the use of these two terms have conflicted. Using the term diagram line as defined here, non-diagram line may well be used for all lines with a different origin. The majority of these lines originate form the dipole-allowed de-excitation of multiply ionized or excited states, and are called multiple-ionization satellites. A line where the initial state has two vacencies in the same shell, notably the K-shell, is called a hypersatellite. Other mechanisms leading to weak spectral features in X-ray emission are, e.g. resonance emission, the radiative Auger effect, magnetic dipole and electric quadrupole transitions and, in metals, plasmon excitation. Atoms with open electron shells, i.e. transition metals, lanthanides and actinides, show a splitting of certain X-ray lines due to the electron interaction involving this open shell. Structures originating in all these ways as well as structures in the valence band of molecules and solid chemical compounds have in the past been given satellite designations.

Source:
PAC, 1991, *63*, 735 *(Nomenclature, symbols, units and their usage in spectrochemical analysis - VIII. Nomenclature system for X-ray spectroscopy (Recommendations 1991))* on page 739

