An x-ray fluorescence spectrometer from Bruker is the elemental analysis instrument of choice for many industry, academic, and regulatory compliance applications in which ascertaining the exact elemental composition of a sample is the key to good decision-making and efficient, profitable operations. An x-ray fluorescence spectrometer from Bruker is the elemental analysis instrument of choice for many industry, academic, and regulatory compliance applications in which ascertaining the exact elemental composition of a sample is the key to good decision-making and efficient, profitable operations. Contact us today to learn how a Bruker x-ray fluorescence spectrometer can enhance your business operations, regulatory compliance protocol, research, or student learning. Illustrated Guide to X-Ray Technics book. Read reviews from world’s largest community for readers. See a Problem? We’d love your help. Let us know what’s wrong with this preview of Illustrated Guide to X-Ray Technics by John E. Cullinan. Problem: It’s the wrong book It’s the wrong edition Other. Details (if other): Cancel. Thanks for telling us about the problem. Return to Book Page. X-Ray Fluorescence is defined as "The emission of characteristic "secondary" (or fluorescent) X-rays from a material that has been excited by bombarding with high-energy X-rays or gamma rays. The phenomenon is widely used for elemental analysis." How does XRF work? Characteristic X-rays are emitted from elements when their electrons make transitions between the atomic energy levels. If an electron transitions from a level with energy $E_i$ to one with energy $E_j$, the emitted X-ray has energy $E_X = E_i - E_j$. Because each element has a unique set of atomic energy levels, it emits a unique set of X-rays which are characteristic of this element. $4p\ 4s$. The chart below illustrates the nomenclature. It is somewhat confusing, because three distinct naming systems are used for the atomic shells.