Soft X-ray Microscopy principle and Applications

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Soft X-ray absorption and phase contrast imaging with the simultaneously monitored X-ray fluorescence (XRF) maps combined with micro-spot X-ray absorption near edge spectroscopy (XANES) have already been recognized as a very powerful tool for understanding the complex processes occurring in biological matter at the submicron length scales [1]. After a brief introduction on soft X-ray Microscopy the presentation will focus on some of the recent achievements of TwinMic soft X-ray microscope of the Elettra Laboratory [2-3] where the recently implemented low energy X-ray Fluorescence (LEXRF) set-up allows elemental mapping of light elements, starting from B and covering the K and L edges of all elements in the energy range 190 to 2200 eV [1,2]. The most recent achievements in research fields, such as neuroscience-neurodisease, nanotoxicology, clinical medicine, environmental science and electrochemistry will be demonstrated through selected results [3-6].

References:

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