

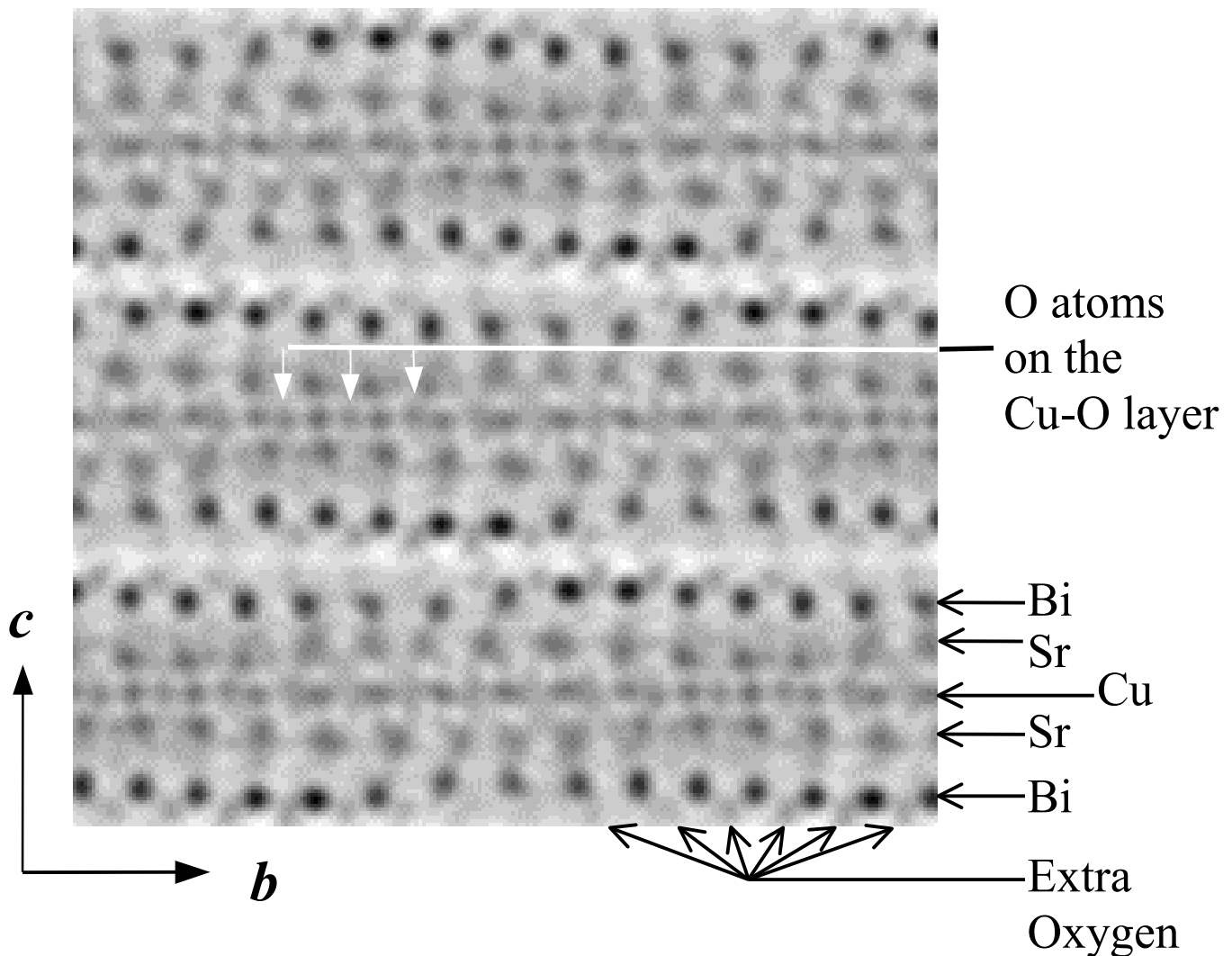
APPLICATION OF DIRECT METHODS IN ELECTRON CRYSTALLOGRAPHY.

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Many important crystalline materials are too small in grain size and too imperfect in periodicity for X-ray single crystal analysis to be carried out, but they are suitable for high resolution electron microscopic observation. The electron microscope is the only instrument that can produce simultaneously for a crystalline sample a micrograph and a diffraction pattern corresponding to atomic resolution. Direct methods have been used for *ab initio* phasing of electron diffraction data from high-Tc superconductors with incommensurate modulations on their structure. On the other hand direct methods have also been used in the image processing of high resolution electron micrographs, where direct methods play an important role in both the image deconvolution and the resolution enhancement. A program has been written to automate the process. The program runs under Microsoft Windows version 3.1 or higher, in an IBM 386 compatible personal computer or better.

Incommensurate modulation in the Bi-2201 superconductor

Potential distribution projected along the *a* axis, obtained by direct-method phasing of the *oklm* electron diffraction pattern (7 average unit cells are plotted along the *b* axis, while 3 unit cell is plotted along the *c* axis.):



The program *VEC* (Visual Electron Crystallographic computing)

