

Application of XAFS spectroscopy for study of microparticles of Sikhote-Alin meteorite

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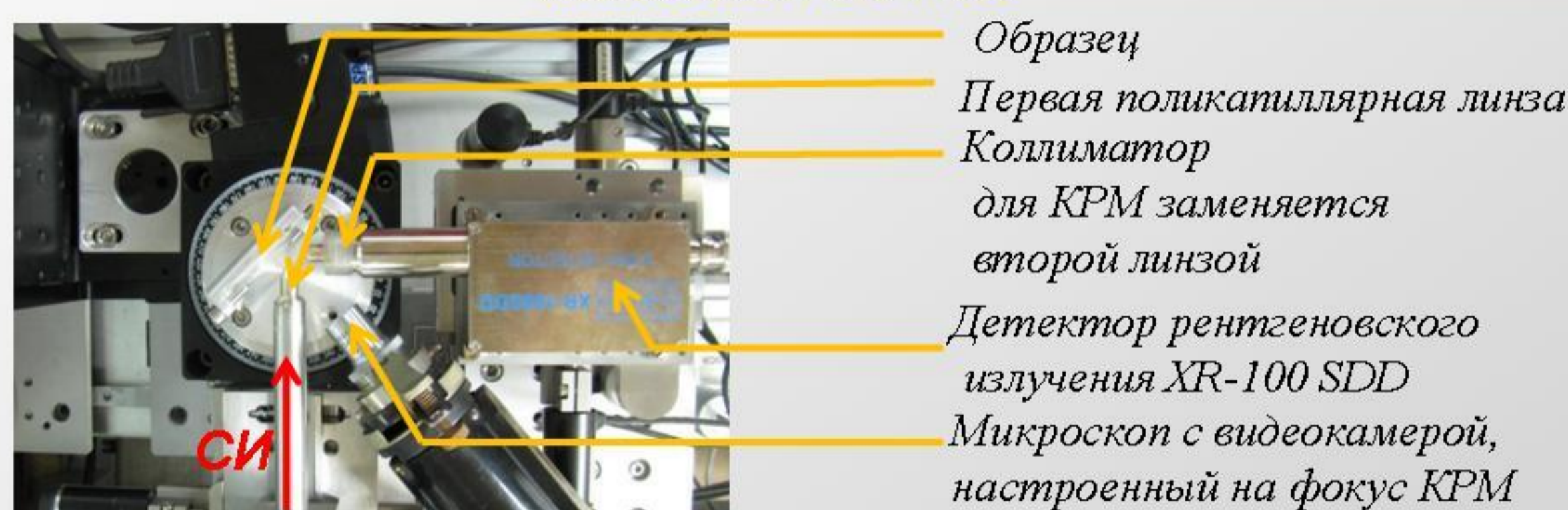
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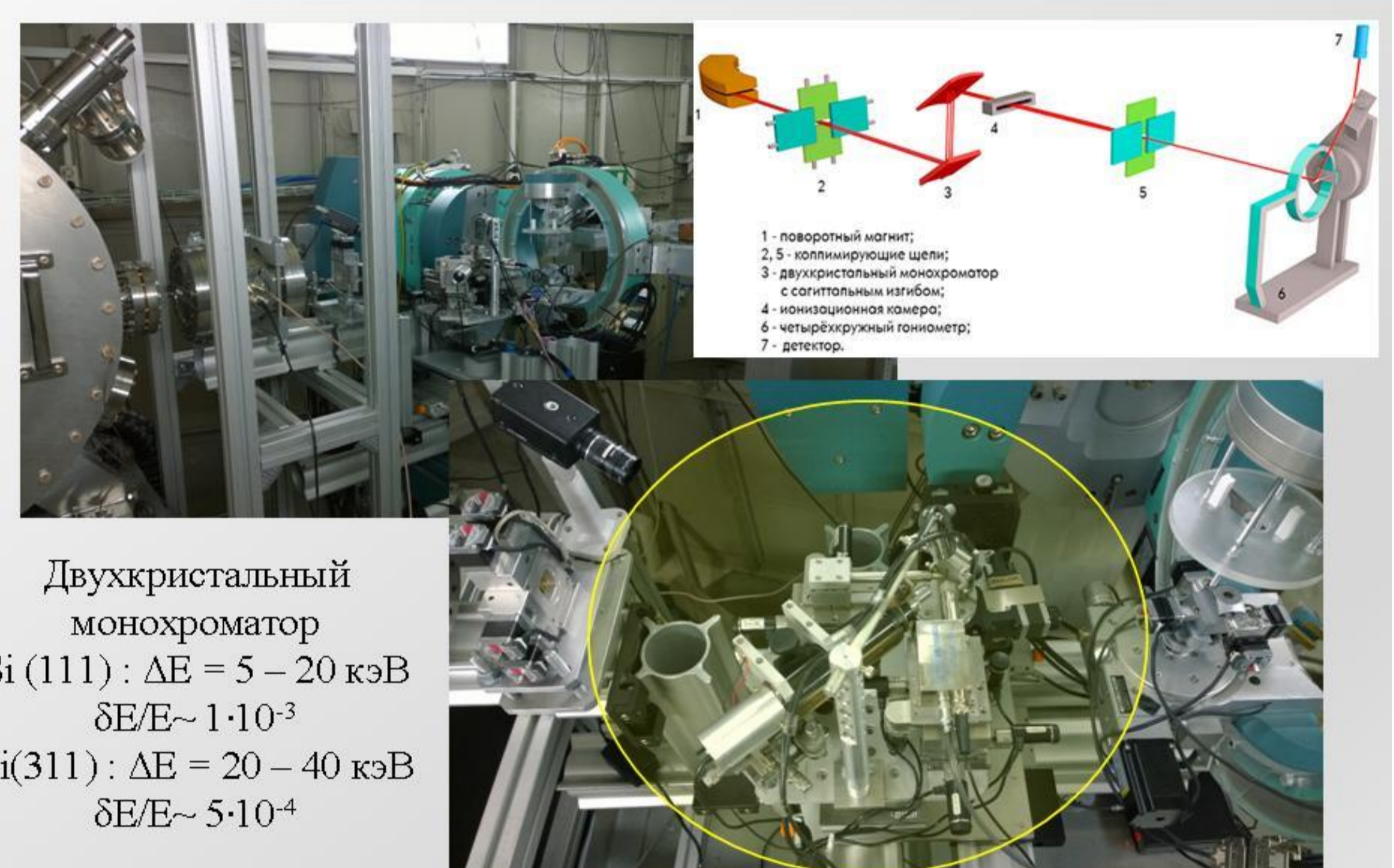
This work is devoted to present of results of the study of microparticles of the Sikhote-Alin iron meteorite by XAFS spectroscopy method. All XAFS (Ni-, Fe- K edges) spectra, using μ - and standard modes, of the microparticles and reference samples were recorded both on experimental module X-ray Confocal Microscopy situated on NRC “Kurchatov Institute” (Moscow) and at XRF-, EXAFS- stations of Siberian Synchrotron Terahertz Radiation Center (SSTRC, Novosibirsk). Some changes of the phase compositions and local structure arrangements of the studied microparticle samples were characterized in detail. The interatomic distances and corresponded coordination numbers were revealed. All possible structural models were discussed. Additionally, morphology and composition of the microparticlesamples were studied by the SEM, EDX and XRF methods.

Experimental module X-ray Confocal Microscopy situated on SSTRC.



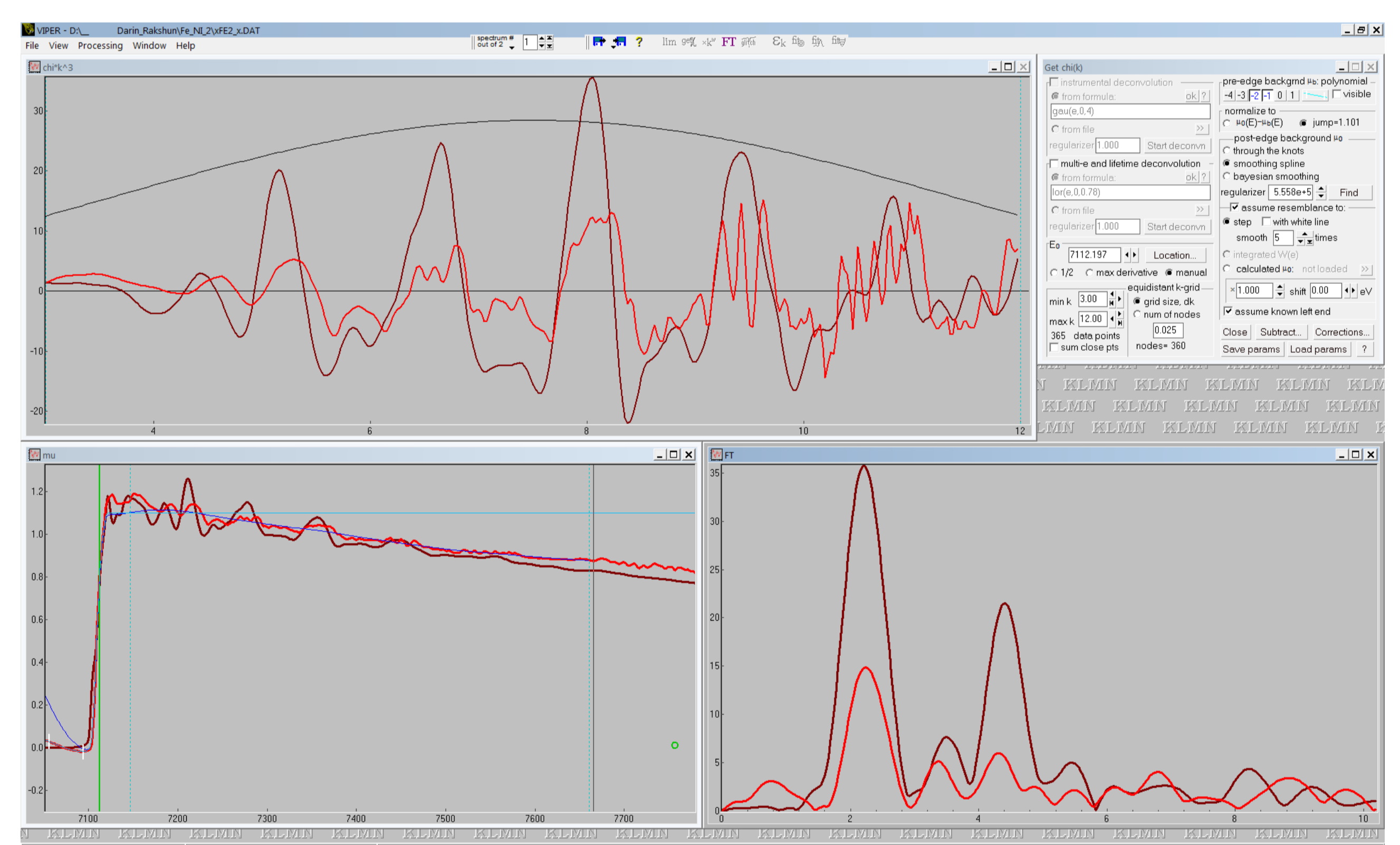
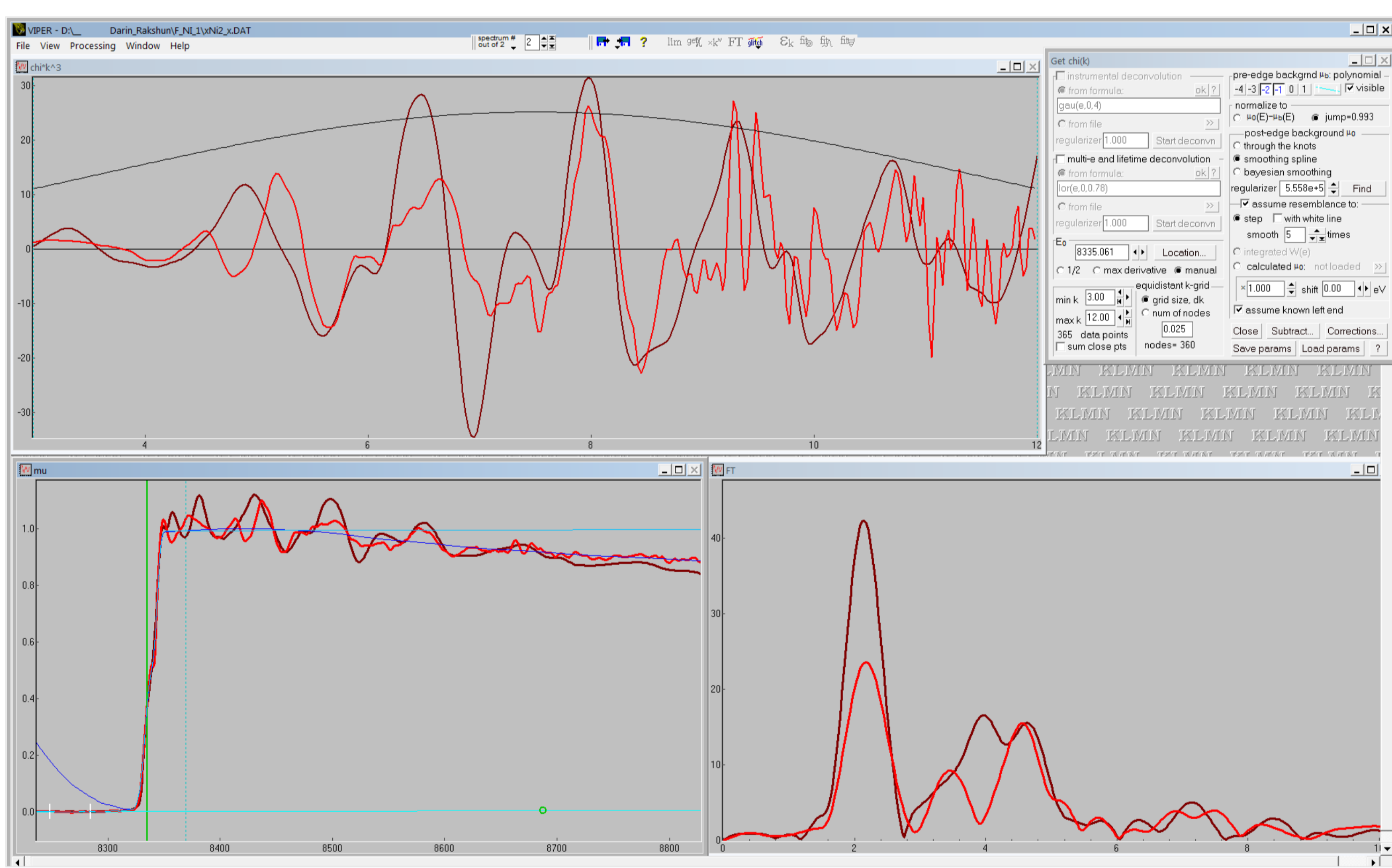
Перемещение образца: 25.4мм по 3 координатам
Минимальный шаг: 0.1мкм
Размер пятна возбуждения: изменяемый от 10 мкм до 100мкм
Детектор: Amptek XR 100 SDD
Монохроматор: Бабочка Si(111)
 $\Delta E = 5 - 40$ кэВ
 $\delta E/E = 2.3 \cdot 10^{-4}$

Experimental module X-ray Confocal Microscopy situated on NRC “Kurchatov Institute”

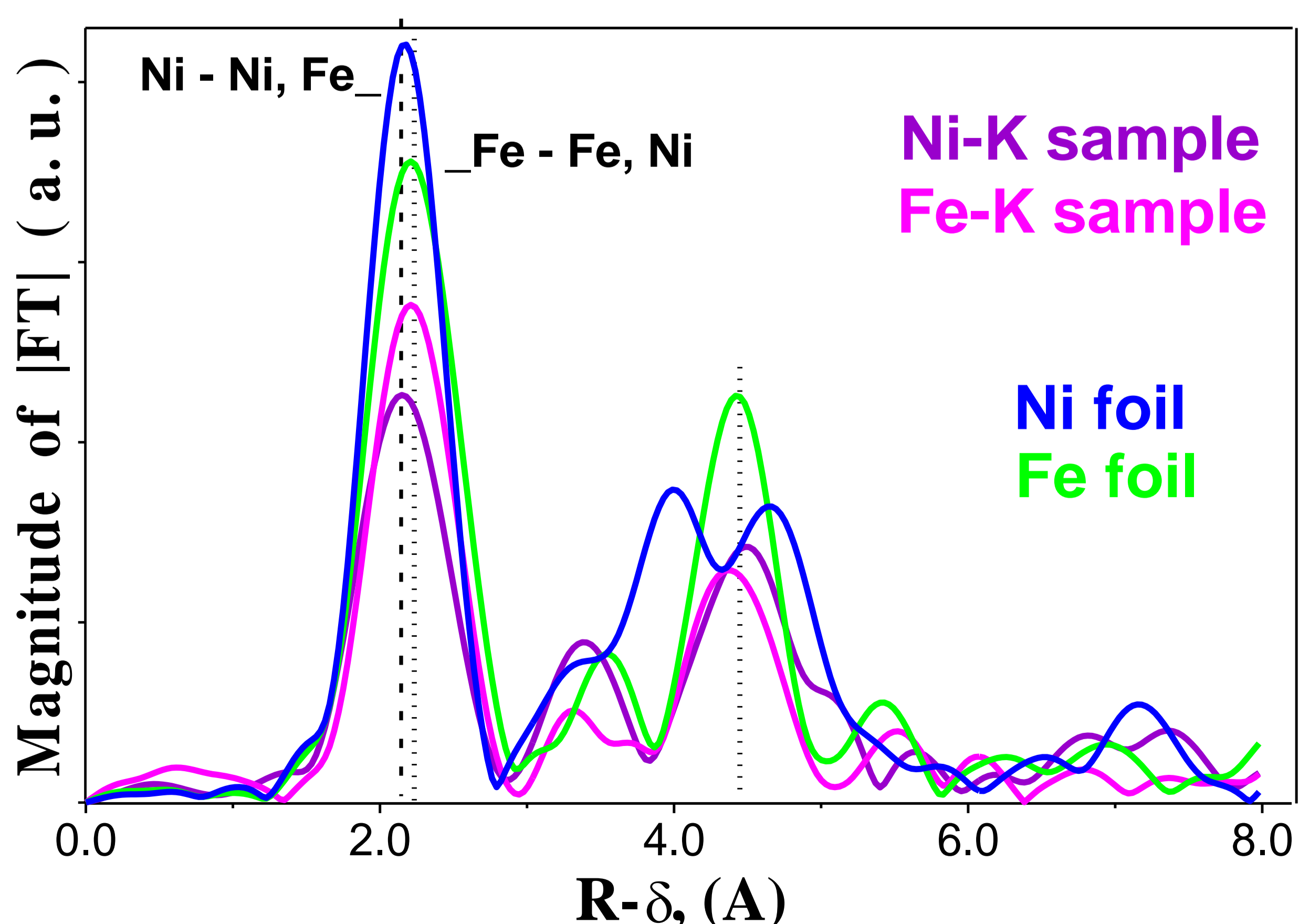


Двухкристалльный монохроматор
Si (111) : $\Delta E = 5 - 20$ кэВ
 $\delta E/E \sim 1 \cdot 10^{-3}$
Si(311) : $\Delta E = 20 - 40$ кэВ
 $\delta E/E \sim 5 \cdot 10^{-4}$

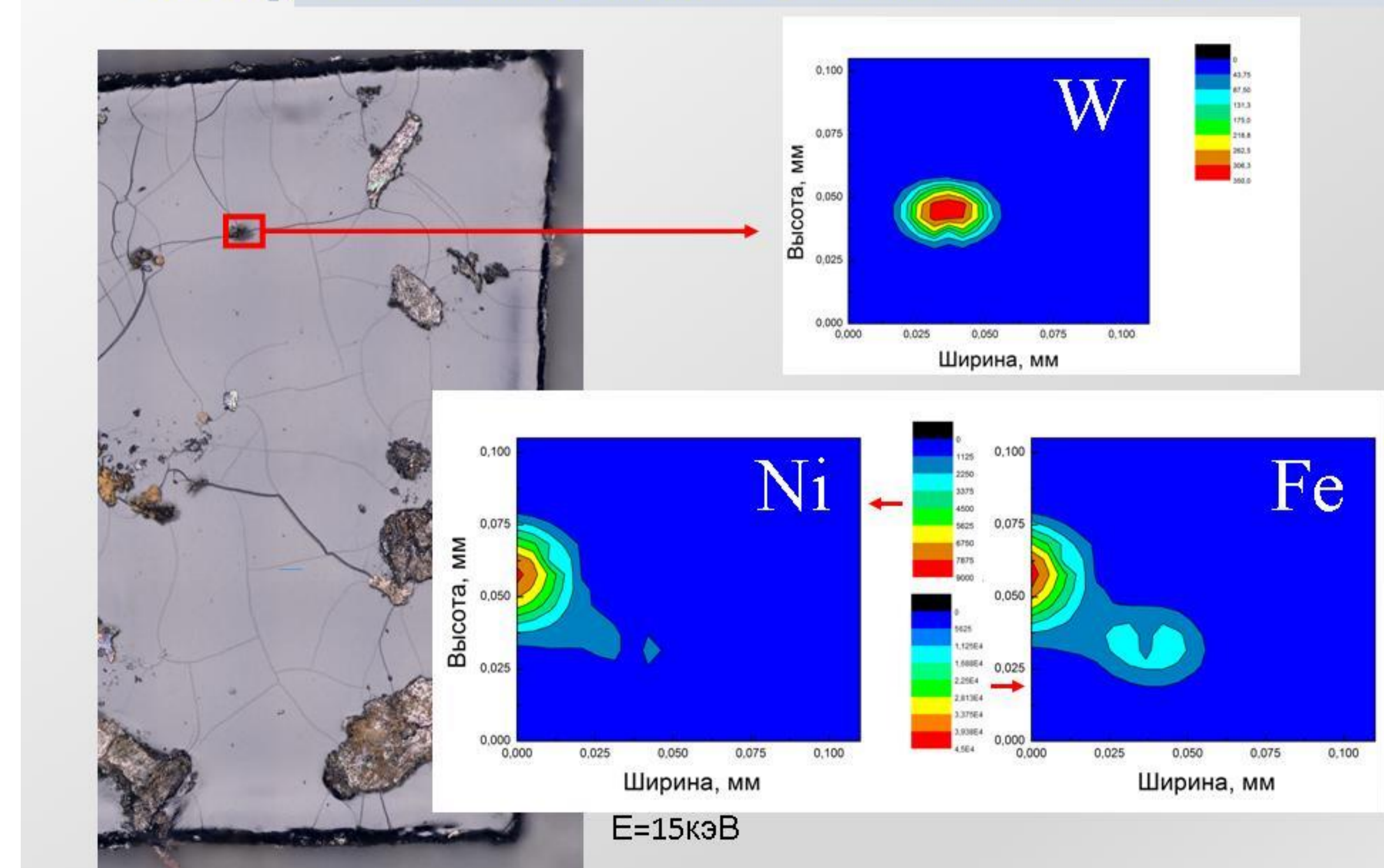
Initial XAFS data (Ni-, Fe- K edge)



Final RDFs for the studied sample.



Study of iron Sikhote-Alin meteorite



This work was done using the infrastructure of the Shared-Use Center “Siberian Synchrotron and Terahertz Radiation Center” based on VEPP-3 of BINP SB RAS.