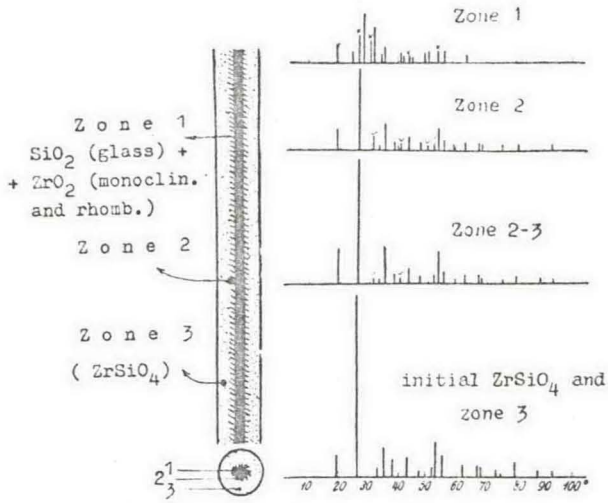

Fig. 3. Shocked powder of $ZrSiO_4$.

comparable with the accuracy of the microsonde, and the parts with a mixture of particles of SiO_2 and ZrO_2 are not distinguised in X-rays of SiKα and ZrLα from the relics of "metamict" zircon. These particles can be distinguished in an optical microscope.

The partial destruction of the lattice (broadening of the lines in the X-ray pattern and disappearance of the weak lines) was observed in zone 2. Sometimes the weak lines of ZrO_2 (marked by V in fig. 3) were found. The EPR-spectrums of zone 2 (fig. 5) reveal the characteristic effects similar to the partially metamict zircon. The broadening of line of EPR-spectra from zone 3 to zone 1, and the 10-fold decrease of its intensity were established.

In general, the behaviour of zircon powder is similar to the natural zircon with metamict destruction. The basic difference is that the high-pressure phase (rhombic ZrO_2) appears in shocked zircon and no intermediate states between the partially metamict zircon in zone 2 and the completely dissociated into oxides in zone 1 were found.

3. Framework silicates and SiO_2

As distinct from orthosilicates, we obtained the glass-like amorphous phases in framework silicates, often with heightened density and without the indication of melting. The appearance of shocked framework silicates differs from that of the othosilicates. The distinctive axial zone has not been observed in this case. Possibly it depends on the shock waves propagating in the frame-

(a)

Fig. 4. Photograph (0.1 × 0.1 mm) of central zone in X-ray radiation (a) SiK_α, (b) ZrL_α.

(b)