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**HIGH TEMPERATURE DEFORMATION OF OCTACHLOROPROPANE:
A MICROSTRUCTURAL STUDY**

by

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A Dissertation

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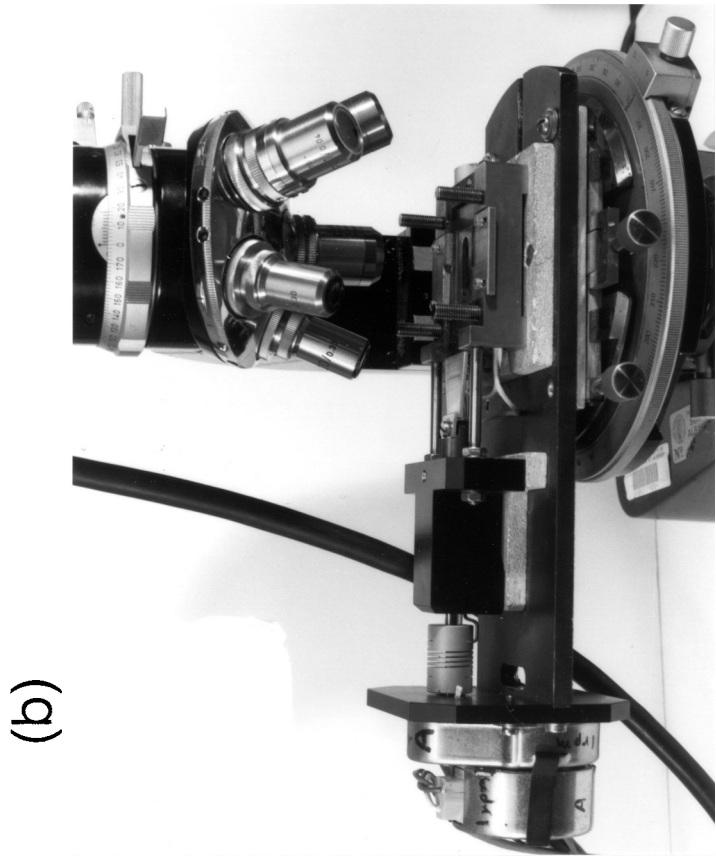
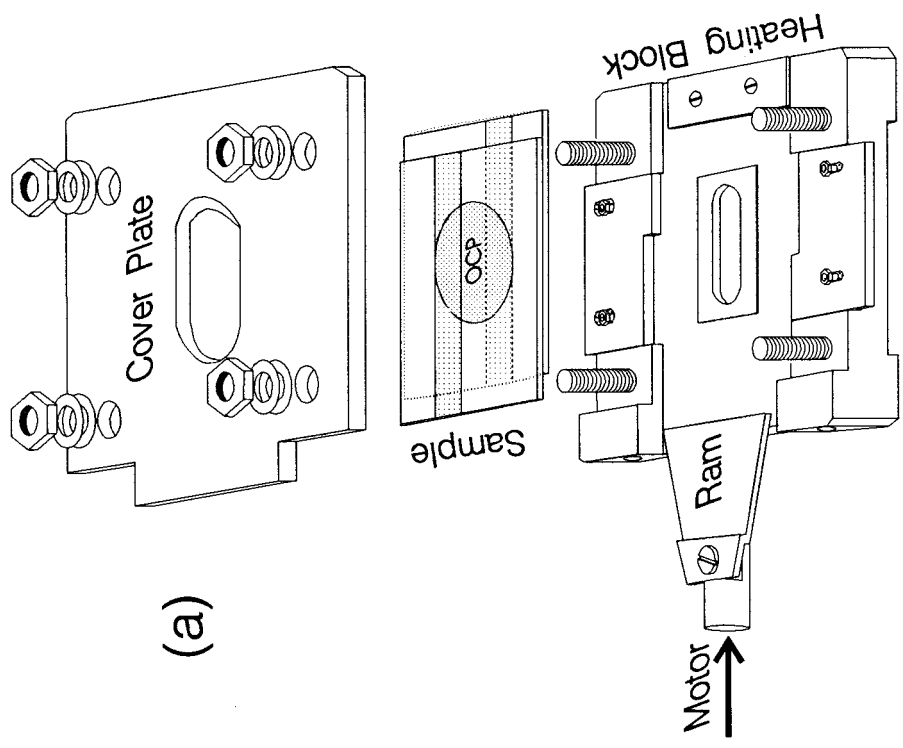


Fig. 2.2 Urai press. (a) Schematic drawing of the essential parts of the press. (b) Photograph of the press mounted on an optical microscope. Cover plate in (a) is not shown.

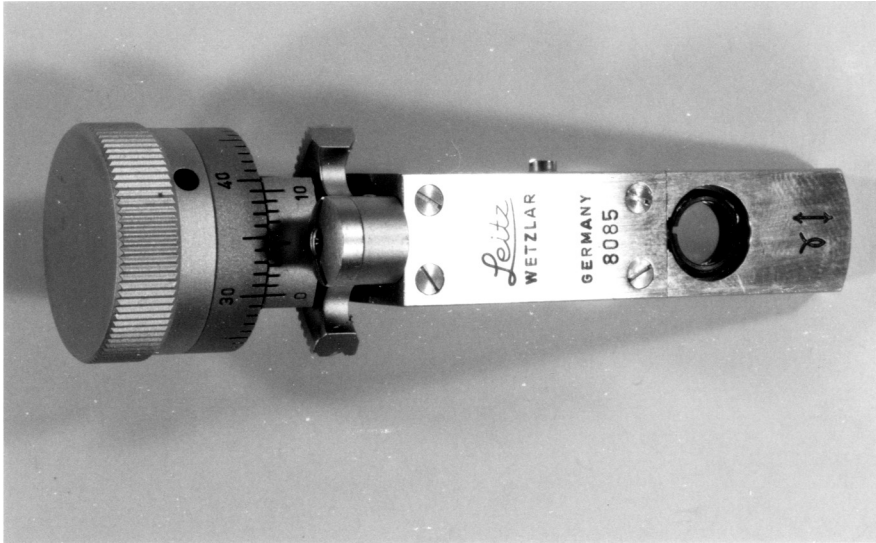
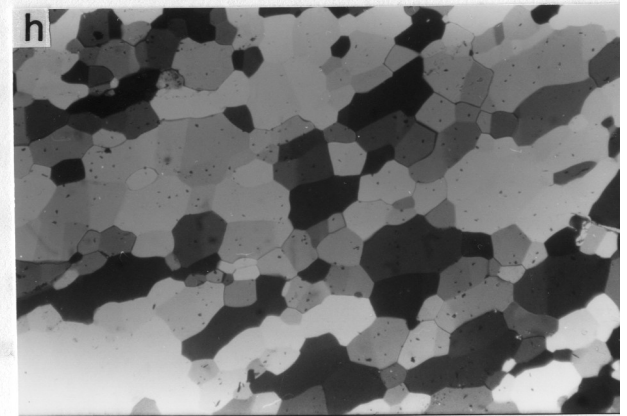
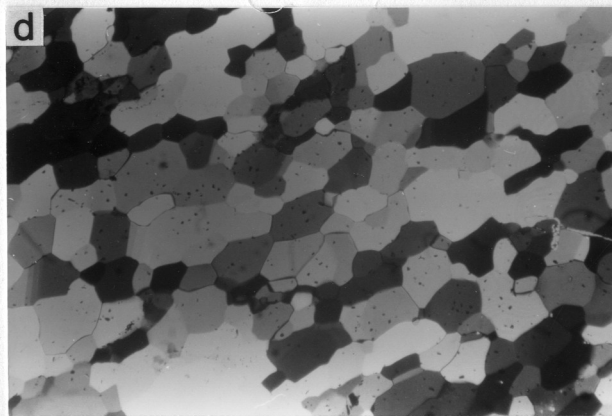
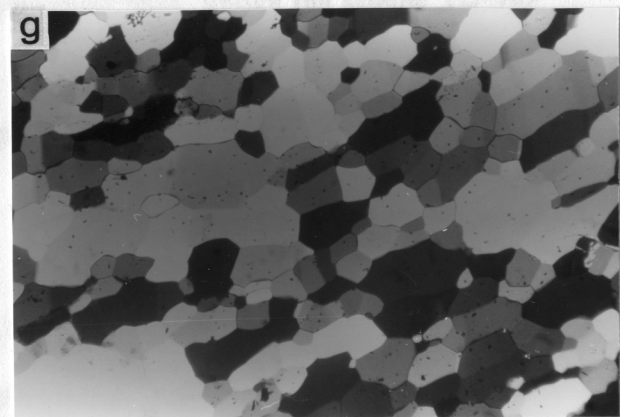
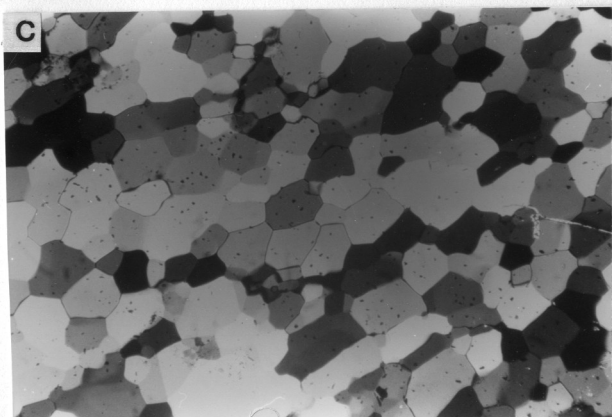
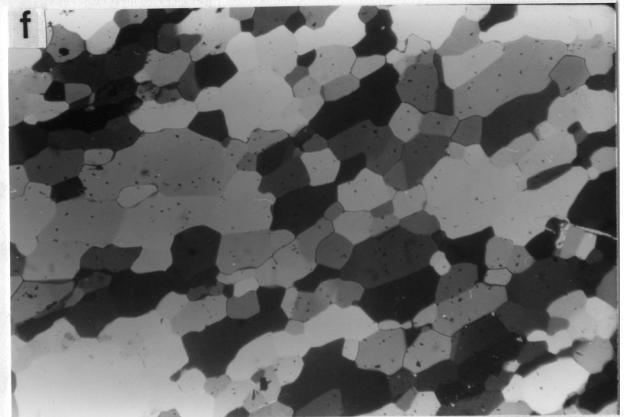
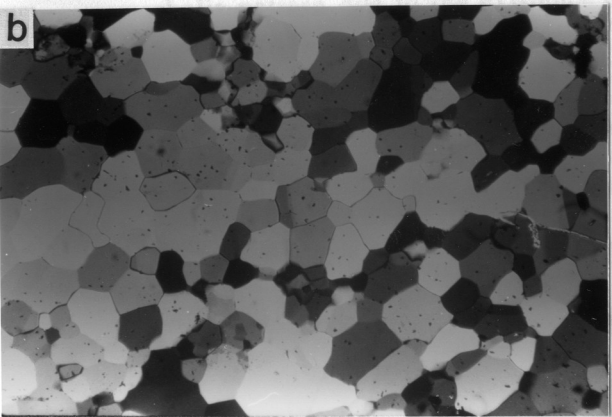
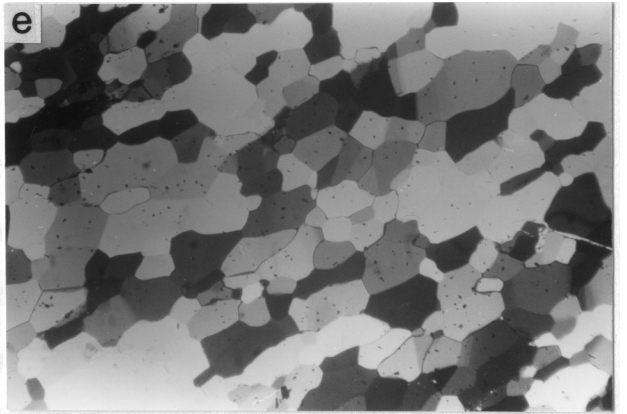
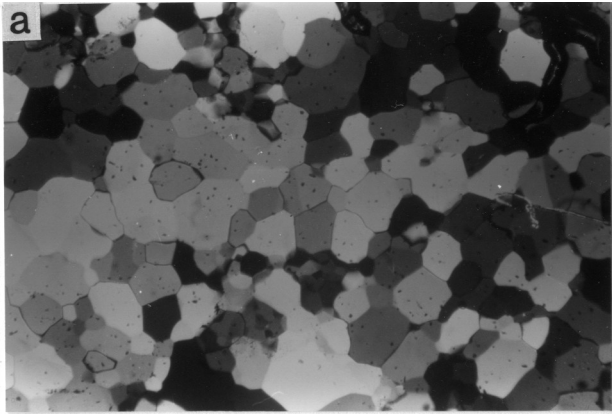


Fig. 2.3 Photograph of Leitz Berek compensator (No. 8085) used in this study.

Fig. 4.2 Photomicrographs of the area mapped in Fig. 1 in cross-polarized light, (a) before deformation, (b) $\gamma = 0.1$, (c) $\gamma = 0.4$, (d) $\gamma = 0.6$, (e) $\gamma = 0.9$, (f) $\gamma = 1.2$, (g) after deformation, $\gamma = 1.3$, and (h) after 22 hr of static interval after deformation. Fine, black dots are marker particles. Dextral shear direction is horizontal. The length of each photo corresponds to 1.96 mm.



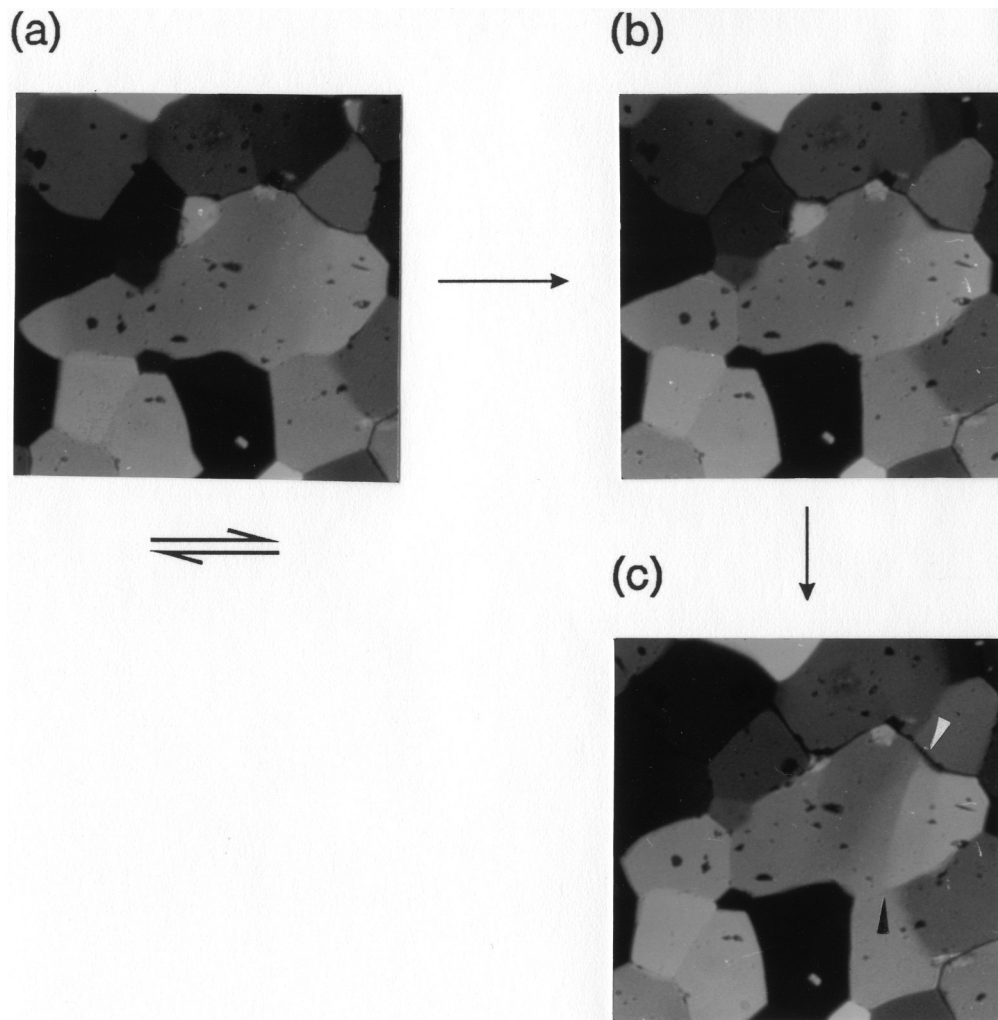


Fig. 5.3 Photomicrographs showing development of Type I subgrain boundary (with paired pointers in (c)) in sample TO-91. Most small black particles are silicon carbide markers. A few (which appear or disappear during the sequence) are small bubbles. Bulk shear strains (γ) of the sample are (a) 0.1, (b) 0.2 and (c) 0.3. Photo dimensions are $310 \mu\text{m}$ per side.

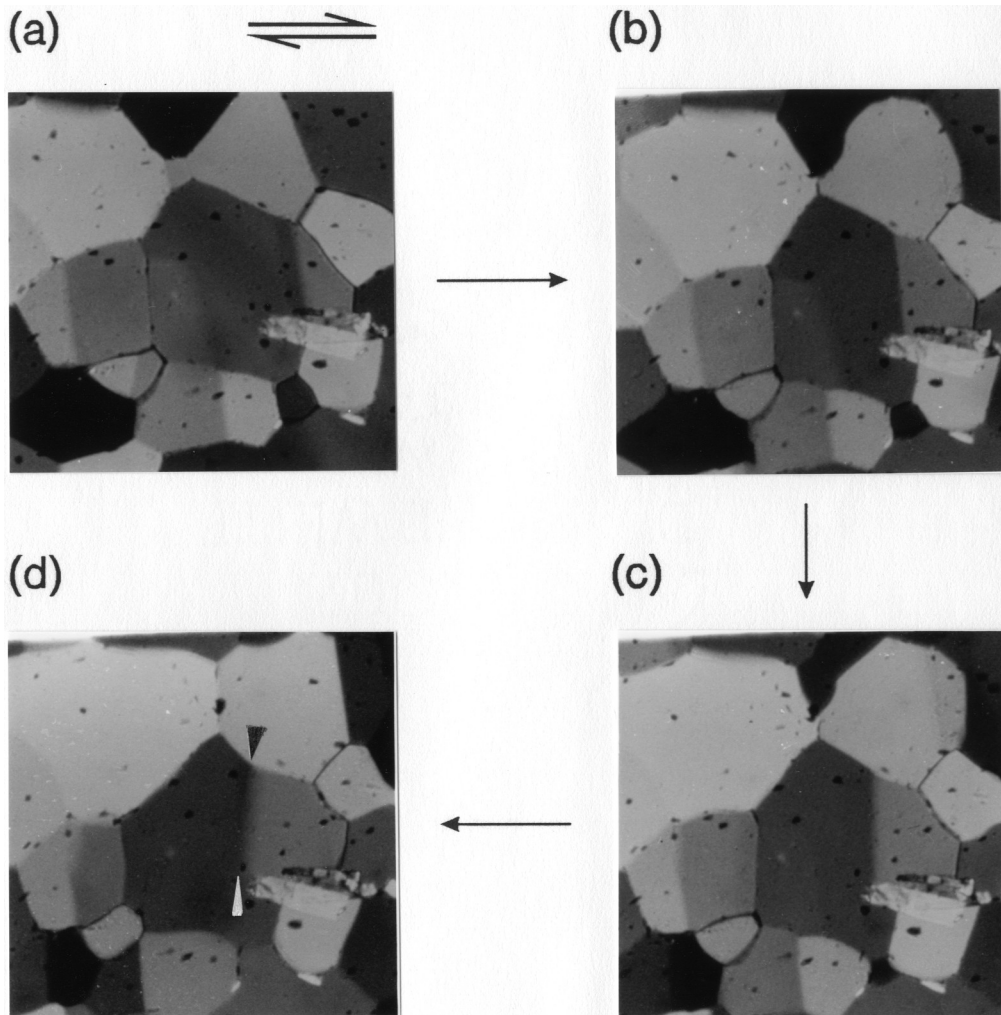


Fig. 5.5 Photomicrographs showing development of Type II subgrain boundary (with paired pointers in (d)) in sample TO-91. Bulk shear strains (γ) of the sample are (a) 0.0, (b) 0.1, (c) 0.2, and (d) 0.4. Photo dimensions are $310 \mu\text{m}$ per side. White fragments are bits of papers incorporated accidentally.

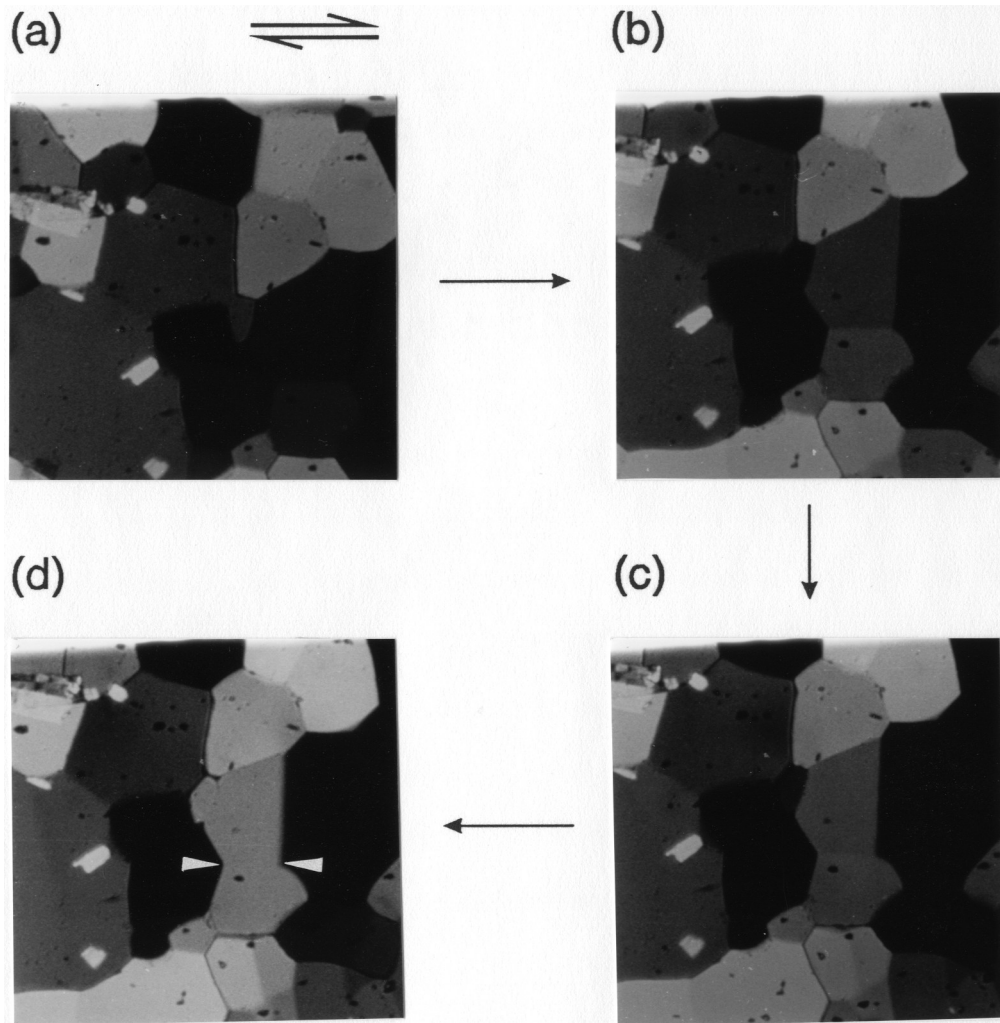


Fig. 5.7 Photomicrographs showing development of Type III subgrain boundary (with paired pointers in (d)) in sample TO-91. Bulk shear strains (γ) of the sample are (a) less than 0.1 (b) 0.1, (c) 0.2, and (d) 0.3. Photo dimensions are $310 \mu\text{m}$ per side.

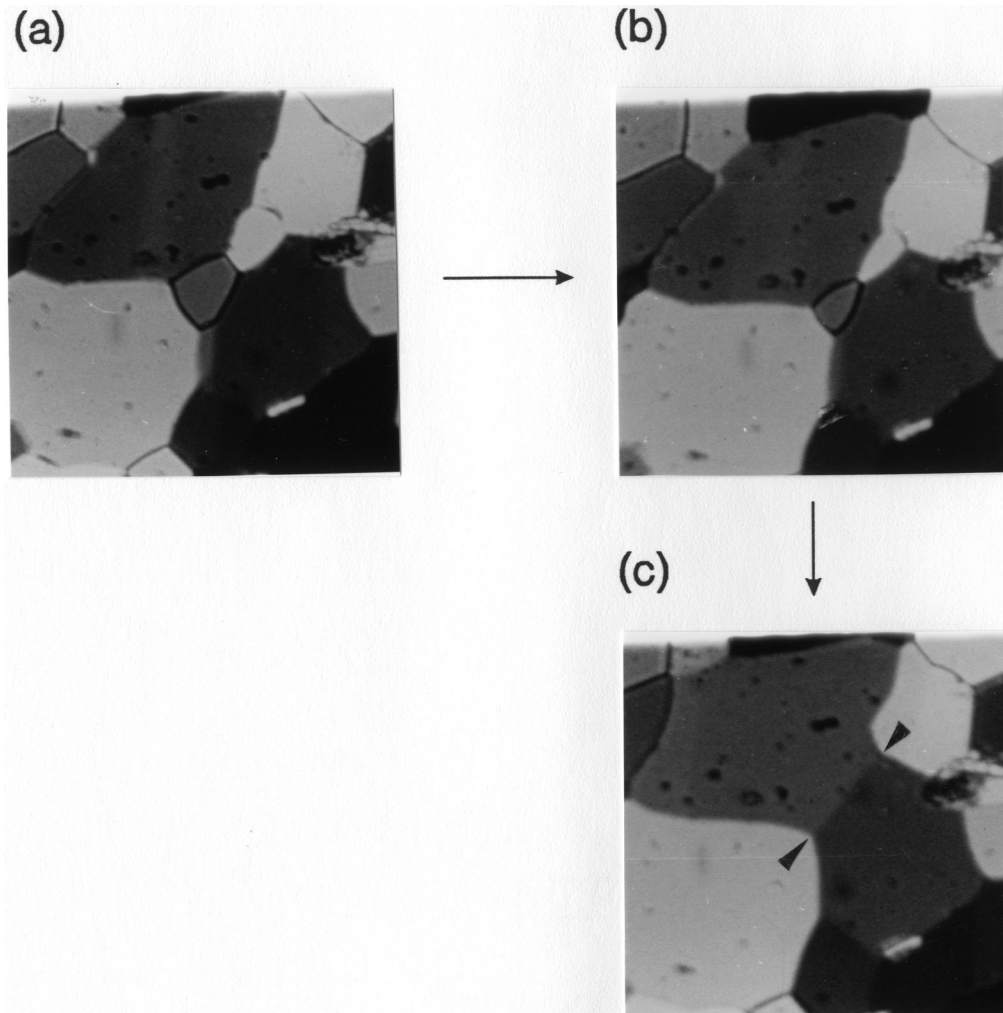


Fig. 5.11 Photomicrographs showing development of Type IV subgrain boundary (with paired pointers in (c)) during a static interval of 10 hours from (a) to (c) in sample TO-91. Stage (a) is at 30 minutes after the motor off. Photo dimensions are $310\ \mu\text{m}$ per side.

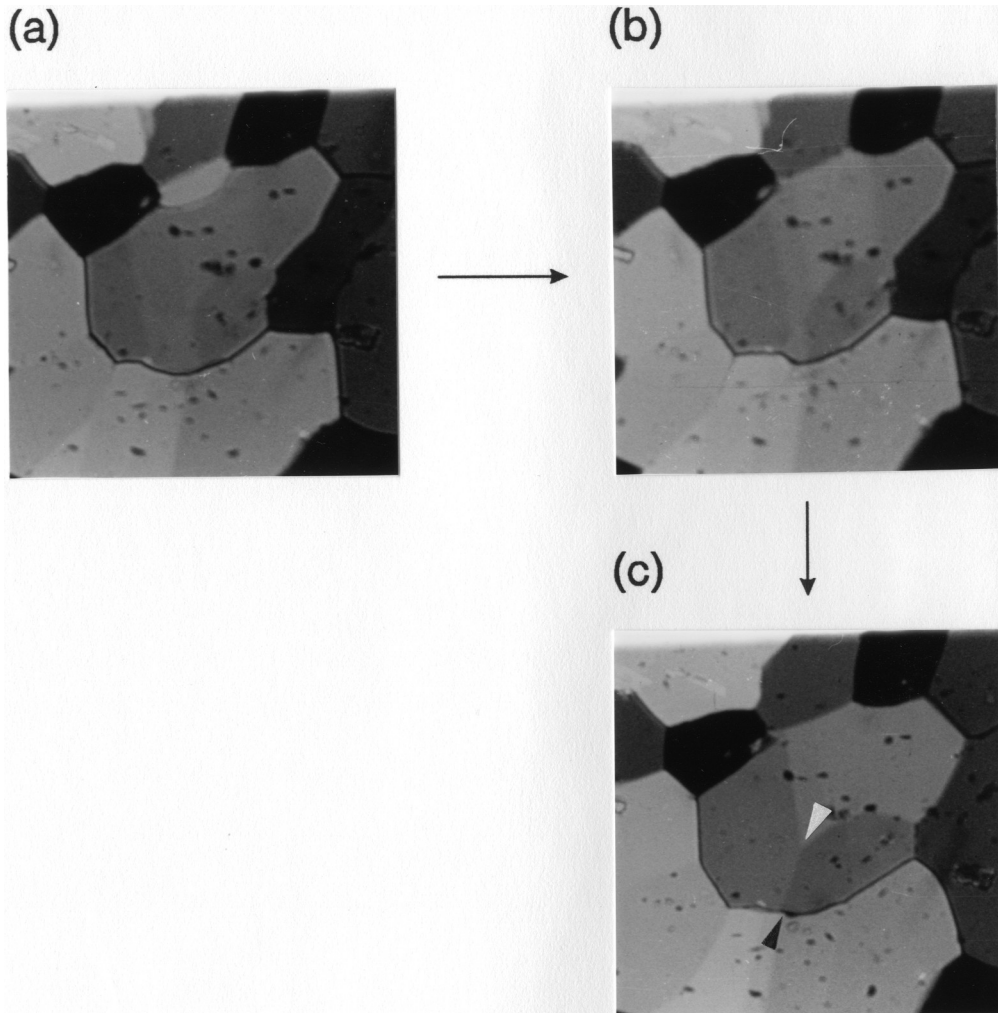


Fig. 5.12 Photomicrographs showing development of Type V subgrain boundary (with paired pointers in (c)) during the static interval of 14.5 hours from (a) to (c) in sample TO-91. Stage (a) is at 30 minutes after the motor off. Photo dimensions are $310 \mu\text{m}$ per side.

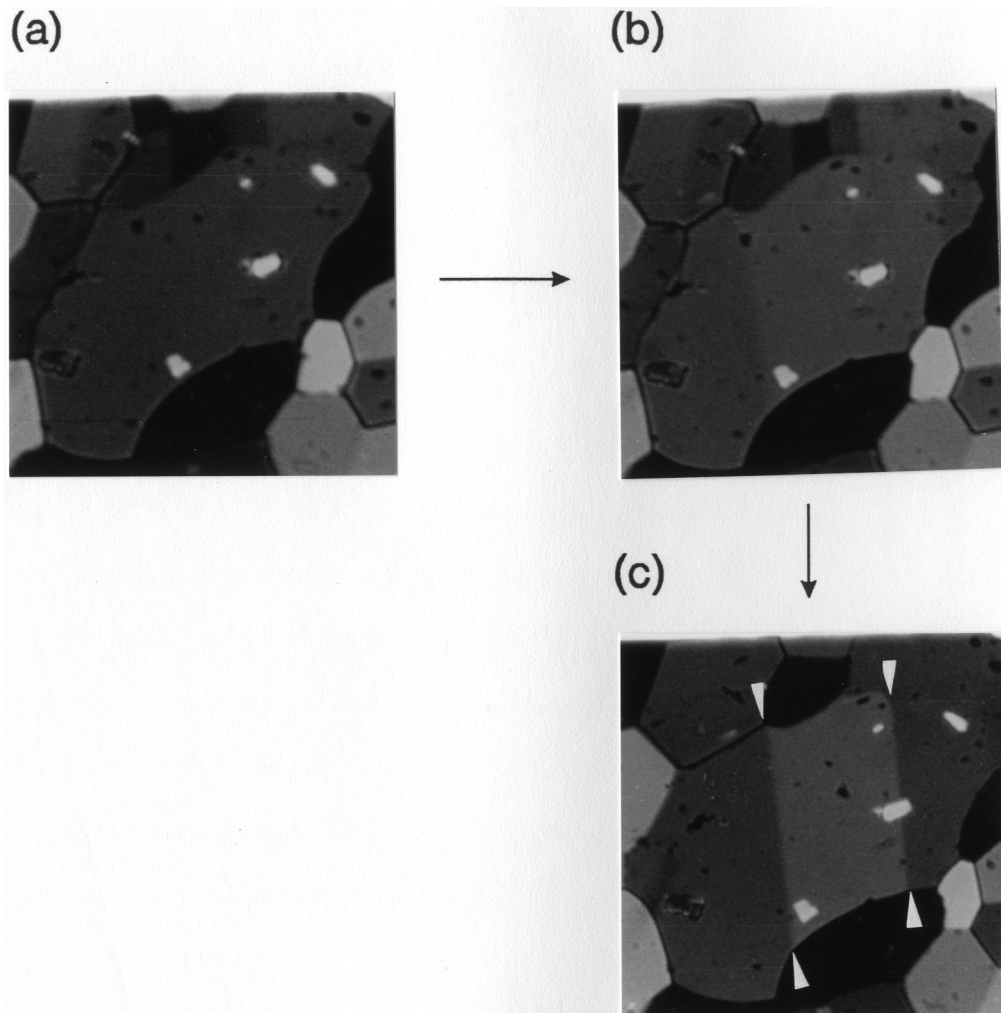
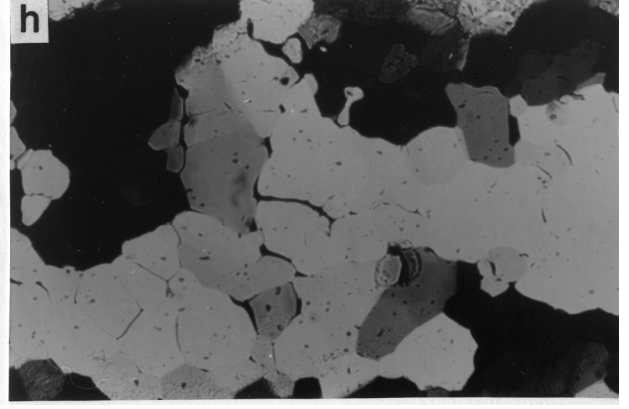
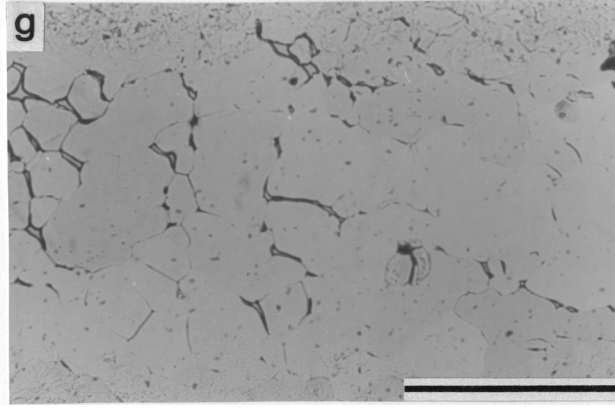
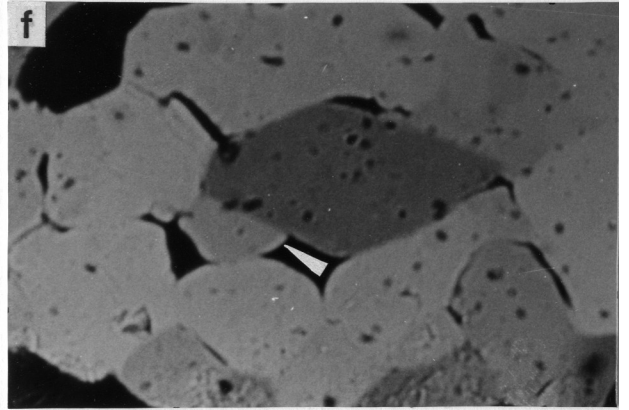
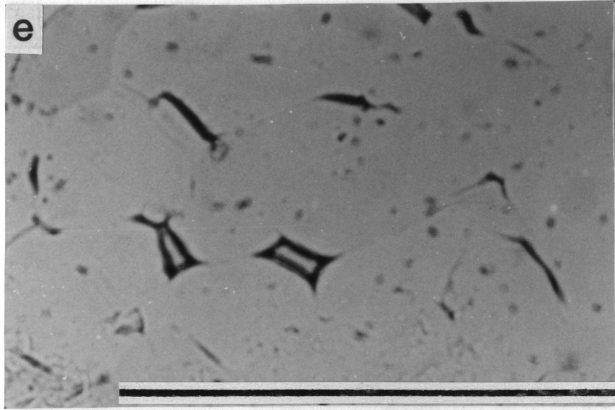
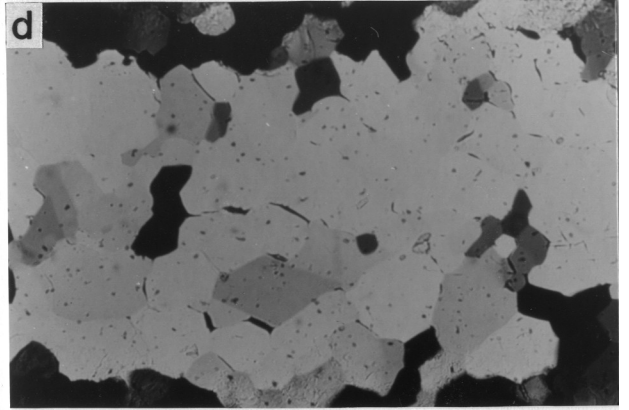
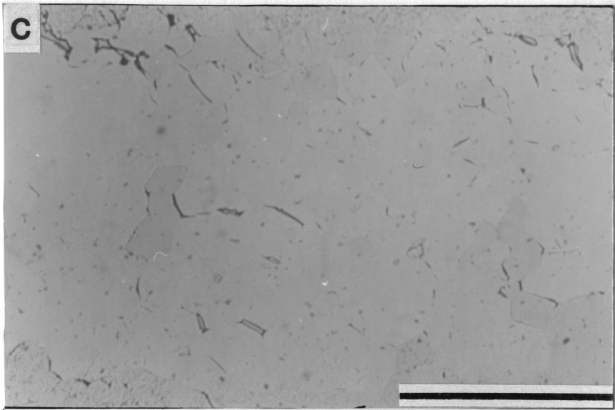
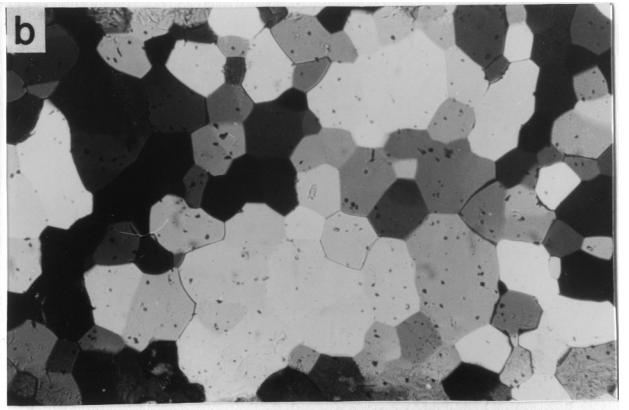
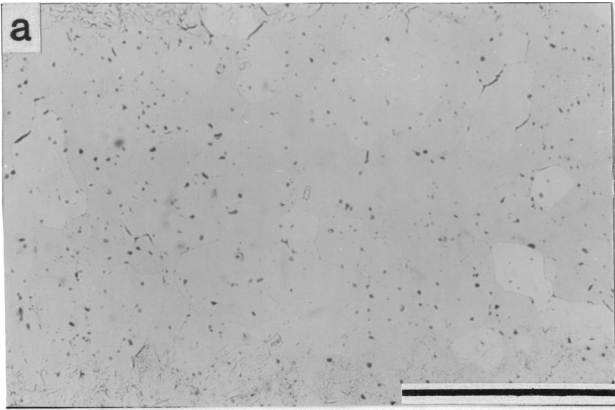


Fig. 5.15 Photomicrographs showing development of Type VII subgrain boundary (with paired pointers in (c)) during the static interval of 12.5 hours from (a) to (c) in sample TO-91. Stage (a) is at 2.5 hours after the motor off. Photo dimensions are $310 \mu\text{m}$ per side.

Fig. 6.7 Plane light and crossed-polars photomicrographs of simple shearing OCP sample TO-105, before deformation (a & b), at $\gamma = 1.1$ (c & d), at $\gamma = 1.2$ (e & f) and immediately after deformation with $\gamma = 1.8$ (g & h). In close-up views (e & f), overgrowth of a grain into the opening (pointer in f) is indicated by a slight difference in interference color of the grain edge adjacent to the opening. Most small black particles are silicon carbide markers. Dextral shear direction is horizontal. Scale bar 0.5 mm.



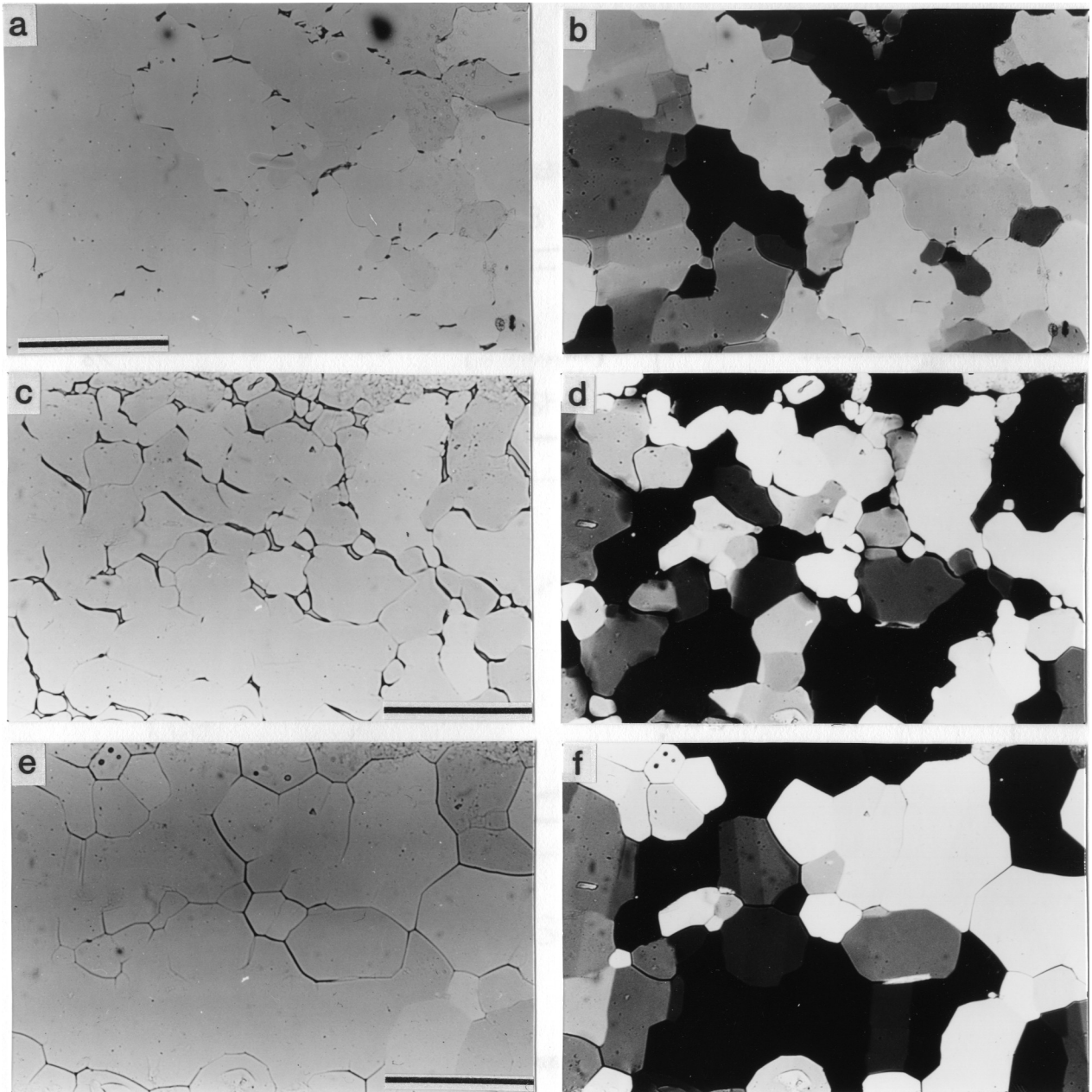


Fig. 6.13 (a) & (b) Plane light and crossed-polars photomicrographs of pure shearing OCP sample TO-88 immediately after deformation with about 50% shortening along horizontal direction. (c) & (d) Simple shearing OCP sample TO-89 immediately after deformation ($\gamma = 1.8$). Dextral shear direction is horizontal. (e) & (f) Same fields as (c) & (d) after 16-hour static heating. Scale bar 0.5 mm.