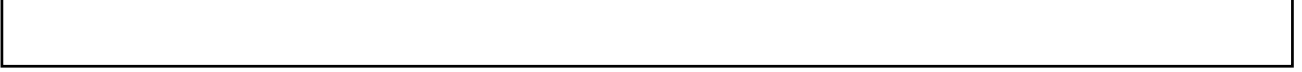

:
 (1)
 X ,5 20 μ m
 (2)
 (3)
 2 3min 3 2 1 2
 a)(111)[112] 1 (110)[001] 2
 (100)[011] (100)[001] (100)[012] 1 b)(110)[001] 2
 (100)[001] 1 850 17h
 c)(110)[001] 2 8 $^{\circ}$ d)
 (200)

Synopsis :

The characteristics of a new Kossel apparatus and technique are: (1) A camera loaded with a number of film cassettes and a divergent X-ray beam generated by scanning electron image enable one to obtain with ease Kossel diffraction patterns from a number of small areas. (2) A camera loaded with a number of film cassettes and a divergent X-ray beam generated by scanning electron image enable one to obtain with ease Kossel diffraction patterns from a number of small areas (5 20 μ

direction in an elongated secondary grain.

(c)JFE Steel Corporation, 2003



透過 Kossel 法による方向性珪素鋼板の微小方位解析

Crystallographic Orientation Determination of Small Areas
in Grain Oriented Silicon Steel by Transmission Kossel Technique

井口 征夫*
Yukio Inokuti

清水 洋**
Yoh Shimizu

嶋中 浩***
Hiroshi Shimanaka

Synopsis:

The characteristics of a new Kossel apparatus and technique are:

- (1) A camera loaded with a number of film cassettes and a divergent X-ray beam generated by scanning electron image enable one to obtain with ease Kossel diffraction patterns from a number of small areas (5~20 μ m in diameter).
- (2) By adopting a modified aperture in the electron system, the high resolution in a scanning image and the

sharp contrast of Kossel patterns are simultaneously obtained.

- (3) Using the computer chart method, a crystallographic orientation can be determined in a time of 2~3 minutes.

By using this apparatus, the orientation analysis of primary and secondary grains of 3% silicon steel was car-

再結晶の研究に適している。

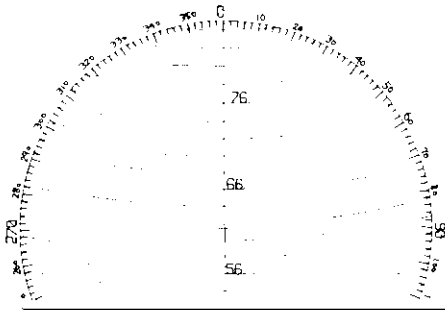
Kossel線のうちSPの入射線は、 (h, k, l) の結晶



ない。従来の装置では、Kossel像の撮影に最適

な照射条件は管電圧(0.005 F A)と真空管電圧(1.5

21.1
0.02
101
21.1
0.02
101
21.1
0.02
101



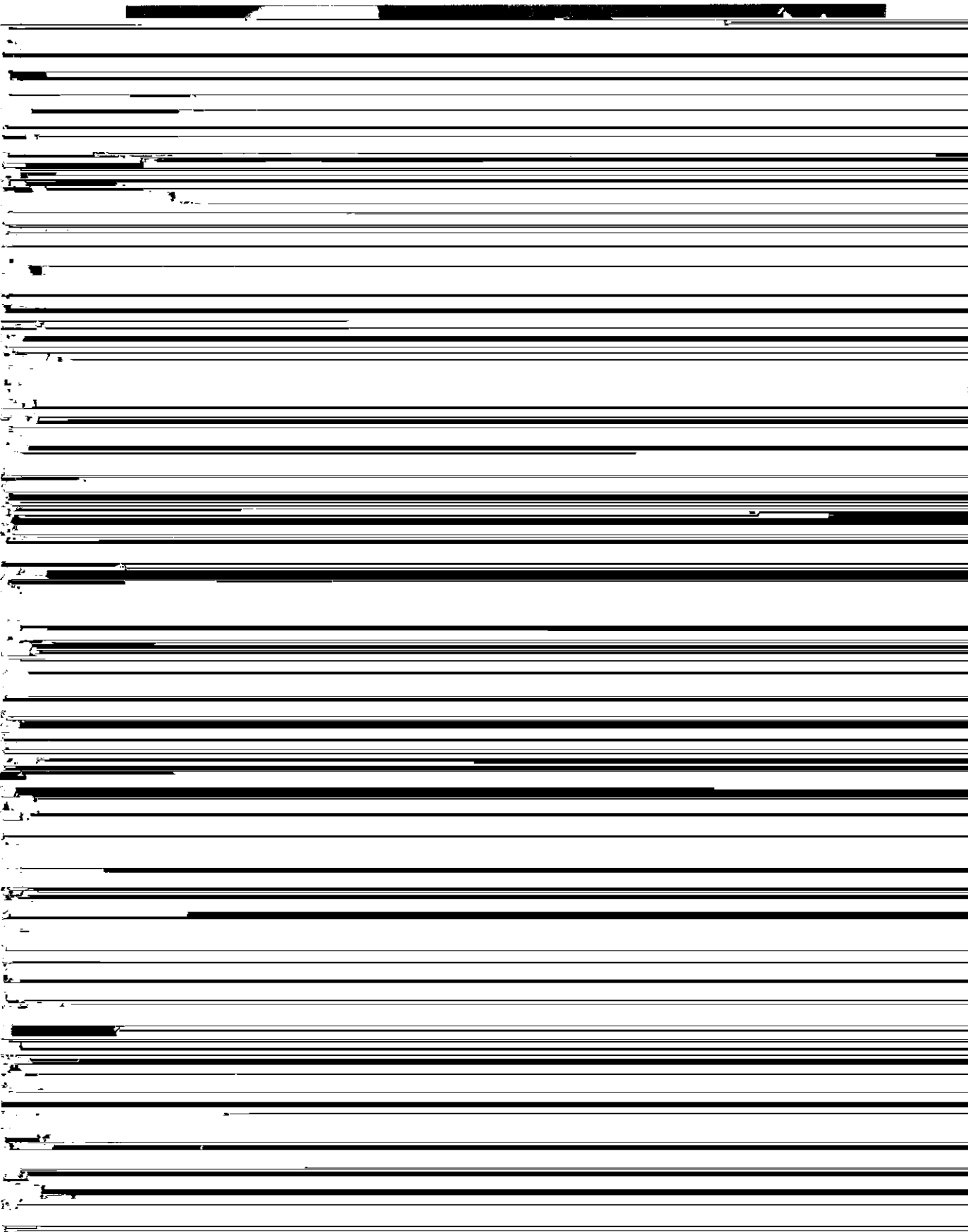
5. Kossel 装置による方位解析例

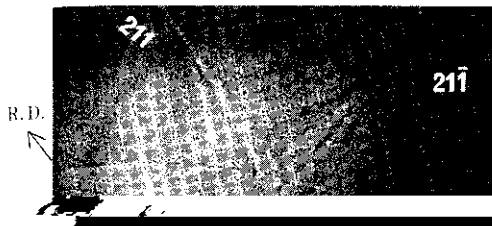
Kossel 装置を製作以来、現在までに約 1100 枚の撮影を行った。その中で得られたデータの一部を報告する。

5・1 直視式回折装置と Kossel 装置の比較

(a)

(b)





R.D.
↑

近い領域(B)に多く存在し、圧延方向の先端や、
2 次粒の中心領域(A)ではほとんど見られない

110

119

電子像と Kossel 像の像質を同時に向上させるこ

うに、透過 Kossel 法に上入加相性柱差銅板を用いた微小五位解析の

- 12) R. Tixier and C. Wacke: *J. Appl. Cryst.*, 3 (1970), 466
- 13) 川崎製鉄㈱: 実開昭 55-38349
- 14) 川崎製鉄㈱: 特開昭 55-33660
- 15) E. T. Peters and R. E. Ogilvie: *Trans. AIME*, 233 (1965) 1, 89
- 16) K. J. H. Mackay—IV International Congress on X-ray Optics and Microanalysis, (1966), 544, Paris

- 17) M. Bevis and N. Swindells: *Phys. Stat. Sol.*, 20 (1967), 197
- 18) H. Hälbig, P. L. Ryder and W. Pitsch: V International Congress on X ray Optics and Microanalysis, (1968), 388, Berlin