(110). The textures were measured by X-ray texture goniometer and the results were presented as orientation distribution functions (ODF). By controlled surface and grain boundary segregation it is possible to achieve the selective grain growth which improves the electrical properties of non-oriented electrical steel. The best results were obtained by alloying it with 0.05 wt% Sn.

## Mechanical Properties

### Ultrahigh carbon steels, Damascus Steels and ancient blacksmiths

*O.D.Sherby*

The processing and mechanical properties of ultrahigh carbon steels (UHCS) have been studied over the past twenty-five years, initially at Stanford University and later at Lawrence Livermore National Laboratory. These studies have shown that such steels (1 to 2.1%C) can be made superplastic at elevated temperature, and have high strength and good ductility at room temperature. The metallurgy of UHCSs is now well understood allowing economical procedures to achieve ultra-fine hypereutectoid spheroidite, pearlite and optically-unresolvable martensite. The investigation of these UHCSs brought us, eventually, to study the history and metallurgy of Damascus steel and Japanese swords, and of ancient blacksmiths. These ancient Persian and Japanese weapons, the most famous in the world, were also ultrahigh carbon steels. It is proposed that the iron age may have begun at the same time period as the early bronze age, approximately 7 000 BC. The Damascus steel age began at about 2 000 BC, the same as the full bronze age.

お詫び

①「鉄と鋼」Vol. 85 (1999) No. 5（平成11年5月号）pp. 405~410に掲載されました論文の和文題目に誤りがございましたので，次のとおり訂正させていただきます。

誤　SUS304L鋼とZr鋼との固相接合継手の耐食性

正　SUS304L鋼とZrとの固相接合継手の耐食性

著者ならびに読者各位にご迷惑をおかけいたしました。お詫びして訂正いたします。

②「鉄と鋼」Vol. 85 (1999) No. 6（平成11年6月号）pp. 454に掲載されました図および写真に一部不鮮明な箇所がございましたので，下記に改めて掲載させていただきます。著者ならびに読者各位にご迷惑をおかけいたしましたことをお詫びいたします。

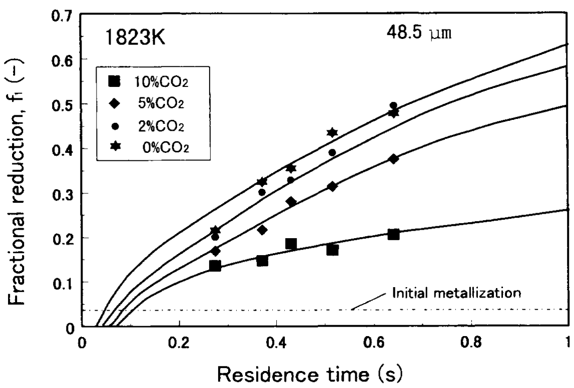


Fig. 3. Relation between fractional reduction and particle residence time at 1823K. (Each curve shows measured results.)

pp. 454　Fig. 3

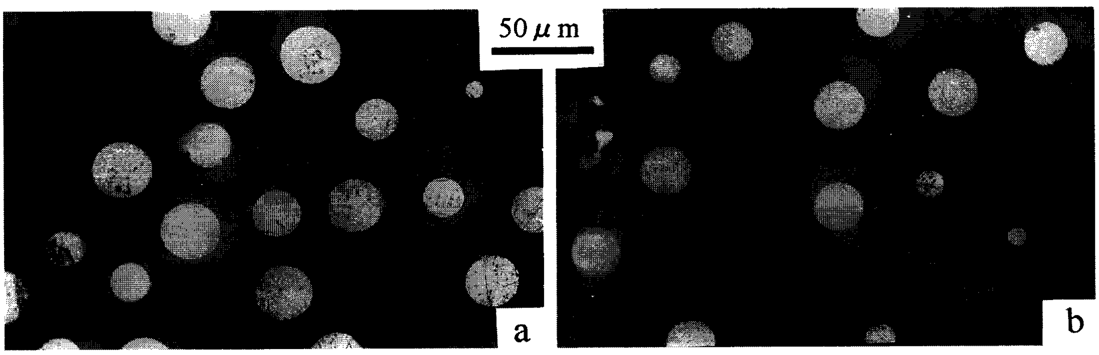


Fig. 4. Cross sections of particles after reduction with 100% CO gas at 1773K, a) $Q$=0.60 N$l$/min, $f_1$=0.359, $\tau$=0.520 sec, b) $Q$=1.5 N$l$/min, $f_1$=0.183, $\tau$=0.279 sec.

pp. 454　Fig. 4