A PROCEDURE TO DETERMINE TRUE
INTERLAMELLAR SPACING

Adel Zaki Mohamed

Department of physics, Faculty of Science, Zagazig

University, Zagazig - Egypt

The interlamellar spacings measurements generally showed a fair degree of scatter, either due to sectioning effect or due to the lack of resolution . In bulk specimens, it is difficult to measure the interlamellar spacings because the pearlite colonies intersect the surface at a variety of angles . Also , the TEM method of searching for the finest pearlite colony as an estimate of the true spacing produces variable results with no fixed relationship to the mean true spacing. Our correction procedure for the interlamellar spacings has been extended to deal with specimens at non-normal incidence (tilted spcimens).

1. Introduction

Pearlite is a lamellar eutectoidal decomposition product which may form in steels and various non-ferrous alloys during transformation under isorhermal continous cooling or forced velocity (directional) growth conditions [1]

Interlamellar spacing measurements are complicated by the spacing variations within a given pearlite colonly. Those between different colonies and those produced by metallographic sectioning plane with respect to the orientation of the lamellae [2]. However, tilting the sample is unavoidable when micro-analysis is carried out because of the X-ray detector positioning.

The present study describes a correction method for the interlamellar spacing of tilted specimens. Also, the author developed a technique to calculate the angle of surface intersection with the interlamellar spacings in the bulk material.

2. Experimental

2.1. Thin Foil Technique:

The chemical composition of the present pearlitic steel was(wt%) : 0.81C. 1.28Cr.