ISO/TS 24597:2011-06 (E)

Microbeam analysis - Scanning electron microscopy - Methods of evaluating image sharpness

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 Steps for acquisition of an SEM image 2
4.1 General 2
4.2 Specimen 2
4.3 Specimen tilt 3
4.4 Selection of the field of view 3
4.5 Selection of the pixel size 3
4.6 Brightness and contrast of the image 4
4.7 Contrast-to-noise ratio of the image 5
4.8 Focus and astigmatism of the image 7
4.9 Interference from external factors 7
4.10 Erroneous contrast 7
4.11 SEM image data file 7

5 Acquisition of an SEM image and selection of an area within the image 7

6 Evaluation methods 8
6.1 General 8
6.2 Contrast-to-noise ratio 9
6.3 Fourier transform (FT) method 9
6.4 Contrast-to-gradient (CG) method 12
6.5 Derivative (DR) method 16

7 Test report 18
7.1 General 18
7.2 Contents of test report 18

Annex A (normative) Details of contrast-to-noise ratio (CNR) 19

Annex B (normative) Details of the Fourier transform (FT) method 24

Annex C (normative) Details of the contrast-to-gradient (CG) method 40

Annex D (normative) Details of the derivative (DR) method 51

Annex E (informative) Background to evaluation of image sharpness 72

Annex F (informative) Characteristics and suitability of the various evaluation methods 77

Annex G (informative) Method of preparing test specimens for evaluating image sharpness 81

Annex H (informative) Example of test report 83

Bibliography 86