
**Microbeam analysis — Analytical
electron microscopy — Method for the
determination of interface position
in the cross-sectional image of the
layered materials**

*Analyse par microfaisceaux — Microscopie électronique analytique
— Méthode de détermination de la position d'interface dans l'image
de coupe transversale des matériaux en couches*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions and abbreviated terms	1
3.1 Terms and definitions.....	1
3.2 Abbreviated terms.....	4
4 Specimen preparation for cross-sectional imaging	4
4.1 General.....	4
4.2 Requirements for the cross-sectional specimen.....	5
5 Determination of an interface position	6
5.1 General.....	6
5.2 Preliminary considerations.....	6
5.2.1 Ideal model of an interface.....	6
5.2.2 More realistic model of an interface.....	6
5.2.3 Dealing with intensity fluctuations in the image.....	8
6 Detailed procedure for determining the position of the interface	8
6.1 General.....	8
6.2 Preparing cross-sectional TEM/STEM image.....	10
6.2.1 Preparing digitized Image.....	10
6.2.2 Displaying the digitized image.....	11
6.3 Setting the ROI.....	11
6.3.1 General.....	11
6.3.2 Classification of image.....	11
6.3.3 Procedure of setting the ROI.....	12
6.4 Acquisition of the averaged intensity profile.....	17
6.5 Moving-averaged processing.....	19
6.6 Differential processing.....	20
6.7 Final location of the interface.....	21
7 Uncertainty	22
7.1 Uncertainty accumulating from each step of the procedure.....	22
7.2 Uncertainty of measurement result on image analysis.....	22
Annex A (informative) Examples of processing the real TEM/STEM images for three image types	24
Annex B (informative) Two main applications for this method	36
Annex C (informative) Calibration of scale unit: Pixel size calibration	43
Bibliography	45