

ISO 21466:2019-12 (E)

Microbeam analysis - Scanning electron microscopy - Method for evaluating critical dimensions by CD-SEM

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols and abbreviated terms	8
5	Generation of Model-based Library (MBL)	8
5.1	Basic components of a MBL simulator	8
5.1.1	Electron probe model	8
5.1.2	SE signal generation model	10
5.1.3	SE signal detection model	11
5.2	Model of specimen	12
5.2.1	Specimen structure and parameters	12
5.2.2	Specimen specification	15
5.2.3	Generation methods of specimen geometry	15
5.3	Monte Carlo simulation	15
5.3.1	Input parameters	15
5.3.2	Beam-specimen interaction	16
5.4	MBL file structure	16
5.4.1	Variable type and value	16
5.4.2	Model description file	20
5.4.3	Parameter specification file	21
5.4.4	Preparation of library data	21
5.4.5	MBL data structure	22
5.4.6	MBL data file format	22
6	Acquisition of a CD-SEM image	23
6.1	Acceptable image	23
6.2	Specimen tilt	23
6.3	Image quality	23
6.4	Selection of the field of view	23
6.5	CD-SEM image data file	23
7	CD determination	23
7.1	Determination of pixel size	24
7.2	Selection of the field of interest	24
7.3	Coordination and normalization	24
7.4	Matching procedure	25
7.4.1	Interpolation	25
7.4.2	Convolution	25
7.4.3	Matching	26
7.4.4	Averaging	30
8	Module functions and relationship	31

9	Uncertainty of CD measurement	33
	Annex A (normative) Flow charts of procedures	35
	Annex B (informative)Exampleofmodeldescriptionfile	39
	Annex C (informative)Exampleofparameterspecificationfile	40
	Annex D (informative) Example of CD evaluation	41
	Bibliography	44