

ISO 5618-2:2024-04 (E)

Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for GaN crystal surface defects - Part 2: Method for determining etch pit density

Contents		Page
Foreword		iv
Introduction		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Principle	3
5	Definition of substrate in-plane position	3
6	Procedures for forming an etch pit	3
6.1	Pre-treatment of a sample	3
6.2	Etching process	4
6.3	Washing	4
7	Method of capturing an etch pit image	5
7.1	Setting the observation conditions for an optical microscope	5
7.1.1	Objective lens	5
7.1.2	Image resolution	5
7.1.3	Measurement area	6
7.1.4	Measurement points	6
7.2	Capturing an etch pit image by using an optical microscope	7
8	Method of calculating the etch pit density	7
8.1	Etch pit counting criteria	7
8.1.1	Counting targets	7
8.1.2	Counting criteria	7
8.2	Counting etch pits	8
8.3	Method of calculating the etch pit density	8
8.4	Method of calculating the coefficient of variation for the etch pit density	9
9	Categorising the inverted hexagonal pyramidal etch pits by size and calculating their percentages	9
9.1	Judging whether inverted hexagonal pyramidal pits can be categorized by size	9
9.2	Principle of categorizing dislocations by inverted hexagonal pyramidal pit size	9
9.3	Determining the inverted hexagonal pyramidal pit sizes	10
9.4	Creating a histogram for the inverted hexagonal pyramidal pit sizes	10
9.4.1	Setting data sections	10
9.4.2	Generating a histogram	10
9.5	Analysing a histogram	11
9.5.1	Method of analysing a histogram	11
9.5.2	Number of inverted hexagonal pyramidal pit size levels	12
9.5.3	Inverted hexagonal pyramidal pit size levels	12
9.5.4	Method of calculating the percentage of an inverted hexagonal pyramidal pit size level	13
10	Test report	13

Annex A (normative) Verification of dislocation detection by etching	14
Annex B (informative) Appropriate inverted hexagonal pyramidal pit size for etch pit counting	17
Annex C (normative) Measurement area	19
Annex D (normative) Measurement points	22
Annex E (normative) Verification of the classifying dislocations by etch pit size	23
Bibliography	25