ISO 20351:2024-10 (E)

Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for optical properties of ceramic phosphors for white light-emitting diodes using an integrating sphere

Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Measurement apparatus **2**
4.1 Apparatus configuration 2
4.2 Light source unit 4
4.3 Sample unit 4
4.3.1 Cell 4
4.3.2 White diffuser or reference cell 4
4.3.3 Integrating sphere 4
4.4 Detection unit 5
4.4.1 Directing optical system 5
4.4.2 Spectrometer and detector 5
4.4.3 Amplifier 5
4.5 Signal and data processing unit 5

5 Calibration, inspection and maintenance of measurement apparatus **5**
5.1 General 5
5.2 Wavelength calibration of light source unit 5
5.3 Cells and cover glasses 5
5.4 Integrating sphere walls and white diffusers 5
5.5 Wavelength calibration of detection unit 5
5.6 Spectral responsivity correction 6

6 Samples **6**
6.1 Reference material 6
6.2 Storage and pre-processing 6
6.3 Filling cells with samples 6

7 Procedure, calculation and report for absolute measurement **6**
7.1 Measurement method 6
7.1.1 Measurement environment 6
7.1.2 Light spectrum without phosphor sample 7
7.1.3 Light spectrum with phosphor sample 7
7.2 Calculations 7
7.2.1 Conversion to photon-number-based spectra 7
7.2.2 Fluorescence spectrum 8
7.2.3 Internal quantum efficiency 8
7.3 Test report 8

8 Procedure, calculation and report for substitution measurement **9**
8.1 Measurement procedures 9
8.1.1 Measurement environment 9
8.1.2 Spectrometer setup for substitution measurement 9
8.1.3 Measurement for reference material 10
8.1.4 Measurement for phosphor material under test 10
8.2 Calculation 10

8.2.1 Spectral responsivity correction 10
8.2.2 Conversion to photon number-based spectral distribution 10
8.2.3 Calculation of scattered light and fluorescence photon numbers 11
8.2.4 External quantum efficiency 12
8.2.5 Absorptance 12
8.3 Test report 12
Bibliography **14**