ISO 20351:2017-09 (E)

Fine ceramics (advanced ceramics, advanced technical ceramics) - Absolute measurement of internal quantum effici ency of phosphors for white light emitting diodes using an integrating sphere

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms and definitions 1

4 Measuring equipment 2
4.1 Equipment configuration 2
4.2 Light source unit 3
4.3 Sample unit 3
4.3.1 Cell 3
4.3.2 White diffuser or reference cell 4
4.3.3 Integrating sphere 4
4.4 Detecting unit 4
4.4.1 Directing optics 4
4.4.2 Spectrometer and detector 4
4.4.3 Amplifier 4
4.5 Signal and data processing unit 4

5 Calibration, checking and maintenance of measuring equipment 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 detecting unit 5
5.6 Spectral responsivity correction 5

6 Samples 5
6.1 Storage and pre-processing 5
6.2 Filling cells with samples 5

7 Measurement methods 6
7.1 Measurement environment 6
7.2 Light spectrum without phosphor sample 6
7.3 Light spectrum with phosphor sample 6

8 Calculations 6
8.1 Conversion to photon-number-based spectra 6
8.2 Photoluminescence spectrum 7
8.2.1 General 7
8.2.2 Method 1 7
8.2.3 Method 2 7
8.3 Internal quantum efficiency 7
8.3.1 Relative number of absorbed photons 7
8.3.2 Relative number of photoluminescent photons 8

8.3.3 Internal quantum efficiency 8

9 Report 8

Bibliography 10