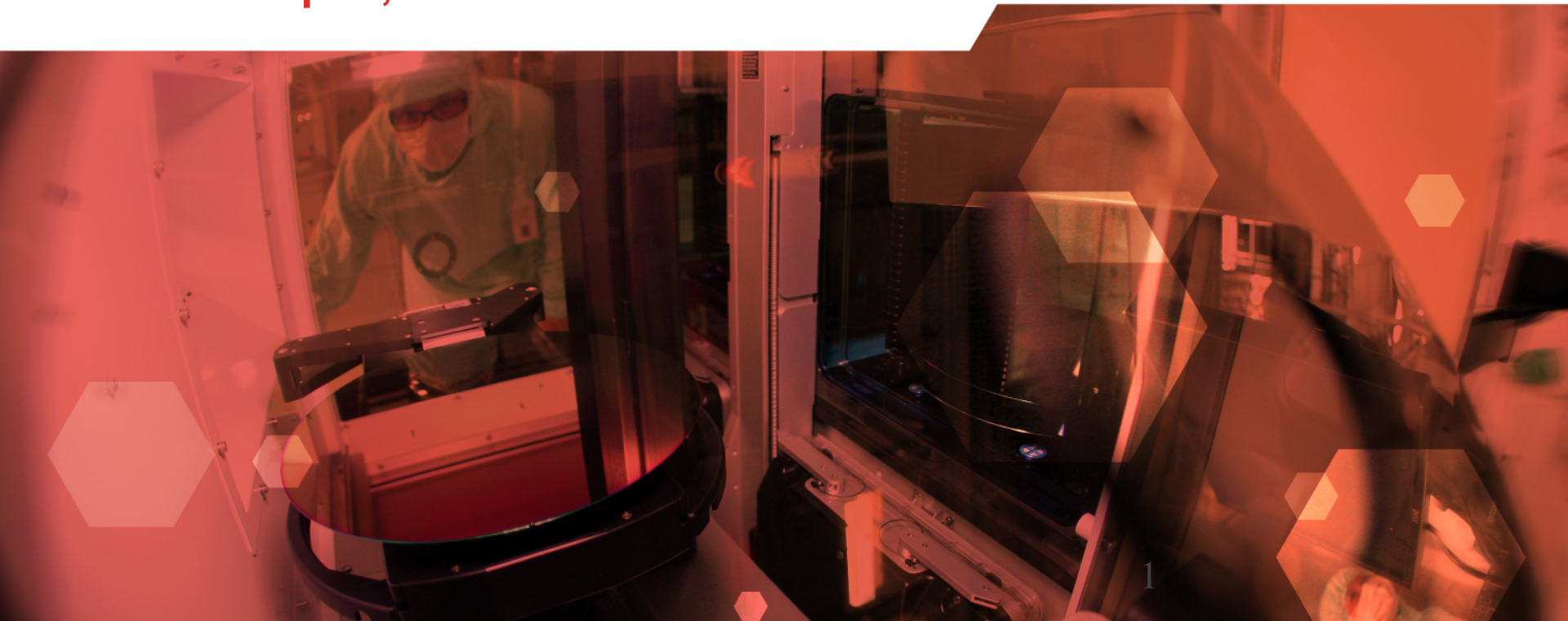


# New Standard: Specification for Dry etching Patterned Sapphire Substrate for HB-LED 用于高亮度LED干法蚀刻图形化蓝宝石衬底规范

**Fujian Jingan Optoelectronics CO.,LTD**

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- 1. 背景

# Background



# 1.背景 Background

- Rapid development of HB-LED and PSS (Patterned Sapphire Substrate) industry demands establishment of standards for PSS products, By doing so, a clear and common basis will be shared by all parties of research and development, production, sales, etc. Because the PSS industry belongs to the upstream in the whole LED industry. Sound standards and specifications will thus benefit the other related fields.
- 因HB-LED和PSS行业的快速发展,急需要建立PSS产品标准,从而使各方在研发、生产、销售过程中有明确与共同的依据。本项目在LED产业属于上游重要基础性领域,需要更多的研究和规范。健全的标准和规范也将使其他领域受益。



# 1.背景 Background

- At the moment, for PSS products, definition of key parameters and characterization methods are not clear and widely accepted, there are no unified standards for products. All these issues are challenging for users, manufacturers and R&D personals, Therefore, it is necessary to establish the standards for PSS products.
- 目前对于蓝宝石图形化衬底产品的关键参数定义和表征方法不明确和广泛接受，没有统一的产品标准，给使用方、生产商以及研究机构的工作带来不便，因此有必要建立蓝宝石图形化衬底的产品标准。



- 2. 标准主要内容  
Content of standard



## 2.标准主要内容 Content of standard

相关行业：图案化蓝宝石基板（PSS）和LED芯片制造业。

Relevant sector: Patterned Sapphire Substrate (PSS) &  
LED chip manufacturing industry.

- The project has no corresponding international standard and industry standards; This standard will be related to the DPSS production of terms and definitions, addressed the specifications of pattern parameter (such as height, width and pitch etc.,) ; DPSS surface quality specifications (such as partical, pattern loss , etc.) 。

该项目没有相应的国际标准和行业标准；该标准将说明DPSS产品的术语和定义, 图形的规格(如高度、宽度和间距等), 规范DPSS表面质量(如颗粒、图形缺陷等)。



## 2.标准主要内容 Content of standard

- 目的 Purpose
- 范围 Scope
- 术语 Terminology
- DPSS图形规格与表面质量 DPSS Pattern parameter and surface quality specifications



## 2.标准主要内容 Content of standard

### 术语 Terminology:

图形 pattern

蓝宝石图形化衬底 patterned sapphire substrate PSS

图形间距 pattern pitch

图形高度 pattern depth

图形底宽 pattern bottom width

去边宽 edge exclusion

图形缺陷 pattern defect

图形一致性 pattern uniformity

图形反射率 pattern reflection

图形反射率标准差 pattern reflection STD(Standard)

干法刻蚀蓝宝石图形化衬底DPSS(Dry Etching Process of the Patterned Sapphire Substrate)





## 2.标准主要内容 Content of standard

### DPSS图形规格

项目	2 Inch	4 Inch
Wafer Diameter	*mm	*mm
Primary flat length	*mm	*mm
Thickness	*um	*um
Back surface roughness	*um	*um
TTV	*um	*um
LTV(5*5mm)	*um	*um
TIR	*um	*um
BOW	*um	*um
Warp	*um	*um



## 2.标准主要内容 Content of standard

### DPSS图形规格

项目	2 Inch	4 Inch
Pattern Diameter	*um	*um
Pattern Depth	*um	*um
Pattern Pitch	*um	*um
Pattern Reflection	*%	*%
Pattern Reflection STD	≤*	≤*
Edge exclusion	*mm	*mm



## 2.标准主要内容 Content of standard

### DPSS表面质量

项目名称	2 Inch		4 Inch	
Edge exclusion	去边宽1mm			
PIN	每片pin个数≤ 每个pin长度≤mm 每个pin宽度≤mm		每片pin个数≤ 每个pin长度≤mm 每个pin宽度≤mm	
Particle	面积<*μm²	≤*颗	面积<*um²	≤*颗
	面积 [*μm²,*μm²)	≤*颗	面积 [*um²,*um²)	≤*颗
	面积 [*μm²,*μm²)	≤*颗	面积 [*um²,*um²)	≤*颗
	面积 [*μm²,*μm²)	≤*颗	面积 [*um²,*um²)	≤*颗
	面积>*μm²	0	面积>*um²	0



## 2.标准主要内容 Content of standard

### DPSS表面质量

项目名称	2 Inch		4 Inch	
Pattern Defect	面积 $< * \mu\text{m}^2$	$\leq *$ 颗	面积 $< * \mu\text{m}^2$	$\leq *$ 颗
	面积 [* $\mu\text{m}^2$ , * $\mu\text{m}^2$ )	$\leq *$ 颗	面积 [* $\mu\text{m}^2$ , * $\mu\text{m}^2$ )	$\leq *$ 颗
	面积 [* $\mu\text{m}^2$ , * $\mu\text{m}^2$ )	$\leq *$ 颗	面积 [* $\mu\text{m}^2$ , * $\mu\text{m}^2$ )	$\leq *$ 颗
	面积 [* $\mu\text{m}^2$ , * $\mu\text{m}^2$ )	$\leq *$ 颗	面积 [* $\mu\text{m}^2$ , * $\mu\text{m}^2$ )	$\leq *$ 颗
	面积 $> * \mu\text{m}^2$	0	面积 $> * \mu\text{m}^2$	0



- 3. 标准制定成员和编制计划  
Members and plan for Standard



### 3.标准制定成员和编制计划 Members and plan for Standard

本标准承制单位：

福建晶安光电有限公司

Fujian Jingan Optoelectronics CO.,LTD

### 3.标准制定成员和编制计划

### Members and plan for Standard

NO.	Name	Company	Industry Chain
1	Mingxin Chen	Jingan	Sapphire Manufacturing
2	Fanghu Si	Jingan	Sapphire Manufacturing
3	YiXiang XU	Jingan	Sapphire Manufacturing
4	Jianzhe Liu	ECBO	Sapphire Manufacturing
5	Zhongwei Hu	HQU	Sapphire RD
6	Weizhi Cai	Sanan	LED Epi&chip Manufacturing
7	Jiangbo Wang	HC Semitek	LED Epi&chip Manufacturing
8	Gang Yang	HIT	Sapphire RD
9	Liangwen Wu	—	LED Epi&Chip Manufacturing
10	Xiaoyan Sheng	ECBO	Sapphire Manufacturing



### 3.标准制定成员和编制计划

#### Members and plan for Standard







谢谢！  
Thank you !