A Window into the Metaverse: The Power of Nanomprint Lithography to achieve a robust Diffractive Lightfield BackLighting (DLB™) for next gen Lightfield displays

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Vice President, Leia Inc.
What We Do:
Leia Inc is an experience platform offering 3D Lightfield products and software applications that challenge the limits of what can be created and shown on a display screen.

What We Do:
Leia’s disruptive, award winning, and world’s first Lightfield tablet, the Lume Pad.

What we are looking for at EPIC:
Leading brands in the automotive, education, gaming, hospitality, medical, and retail industries are embracing Lightfield as the de facto medium to connect with their consumers and re-define their marketplaces. We look forward to partnering with you and-or your extended networks interested in our 3D Lightfield products.
Switchable Lightfield Displays.

“This new display is transforming a technology that’s been around for 100 years.”

Forbes

“Leia, the future of displays.”

528 patents filed to date
2D

Flatland...
3D
Gaining Depth...
Lightfield
The whole deal...
Diffractive LightField Backlighting (DLB™)
LeiaGlo.
Transparent “Hologram”
DLB™ => 2D mode
Our global offices enable us to specialize in R&D, product design, technology, content, software development and manufacturing.

Our internal foundry enables us to cycle ideas to nanofabrication to imprint and measurement within a 2 weeks cycle → 100s of ideas and improvements per quarter.
High Compactness & Large Areas are two of the most challenging frontiers in modern nanotechnology: we have to conquer both in Leia Inc.

The scary night, 2021

SEM image, courtesy: Emeline Soichi, Leia Inc.

The Starry Night, 1889 by Vincent Van Gogh
High Compactness & Large Areas are two of the most challenging frontiers in modern nanotechnology: we have to conquer both in Leia Inc.

Nanograting fields near NewWahh, 2021

SEM image, courtesy: Emeline Soichi, Leia Inc.

Wheat Fields near Auvers 1888 by Vincent Van Gogh
Defectivity & HHO lifetime: **Robust LightGuide**

Inspection angle: vertical to center of AA surface as 0°, Light on images should be inspected within ±45°

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
<th>Allowable number of defects</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dot Defects</strong></td>
<td>D ≤0.1mm</td>
<td>no limit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1 &lt; D ≤ 0.20 mm</td>
<td>3</td>
<td>10mm</td>
</tr>
<tr>
<td></td>
<td>D &gt; 0.20 mm</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Pitting dot</strong></td>
<td>D ≤ 0.05 mm</td>
<td>N ≤ 20, within Viewing angle above 15 Degree</td>
<td>20mmX20mm, max 2 islands in one screen</td>
</tr>
<tr>
<td><strong>Bubble Dot</strong></td>
<td>Fix position</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Random position</td>
<td>Refer to Dot Defect spec</td>
<td></td>
</tr>
<tr>
<td><strong>Black Dot</strong></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Line Defects</strong></td>
<td>W &lt; 0.02 mm</td>
<td>no limit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.02mm &lt; W ≤ 0.1mm, L ≤ 3.0mm</td>
<td>2</td>
<td>5mm</td>
</tr>
<tr>
<td></td>
<td>W &gt; 0.1mm or L &gt; 3mm</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>White/Black Dirty</strong></td>
<td>Erased by solvent</td>
<td>no limit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not erased by solvent</td>
<td>Collect data to verify</td>
<td></td>
</tr>
<tr>
<td><strong>Dimple/Pimple</strong></td>
<td>Refer to limit SPL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mura</strong></td>
<td>Refer to limit SPL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Vertical / Stripe)</td>
<td>Refer to limit SPL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pin Mark</strong></td>
<td>Erased by solvent</td>
<td>no limit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not erased by solvent</td>
<td>Refer to limit SPL</td>
<td></td>
</tr>
<tr>
<td><strong>UV Missing</strong></td>
<td>Extend to AA zone</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Defectivity & HHO lifetime: Robust LightGuide

Examples of some industry-accepted RAs our products pass:

- High Temp Operation (240H 70C)
- Low Temp Operation (240H -20C)
- High Humidity Operation (88H 90%RH 60C)
- >90% product yield based on strict display industry defect criteria
Multiple factors to contribute to reliability

…and repetition of product when it comes to Leia Inc’s nanotechnology and nano-imprint technologies. These factors directly affect Yield, Output and Product quality.
Total solutions capabilities

In house A-to-Z production line as well as a global network of longstanding partnerships

Glass wafers, Silicon, to flexible plastics

Rapid home built custom assemblies for fast prototyping for partners and customers

MarkII P5000 AMAT Dual Chamber Etcher

In-line ASML DUV Twinscan: Production 8” and 12” asset
The LumePad: Break through 3D LightField Technology

Easily integrate Lightfield interaction and experiences into your business

https://www.lume-pad.com/
https://shop.leiainc.com
https://www.leiainc.com/products/lume-pad/
Leia Inc’s 3D LightField Technology: a platform for the future of visualization

3D LightField Technology applications and immersions

https://www.leiainc.com/products/lume-pad/
https://www.lume-pad.com/
Leia Inc Software Suite: Core Lightfield Apps

make any content come alive in 3D

LeiaStream
Explore amazing 3D videos on Leia’s new streaming network built for everything you create.

LeiaPix
The #1 social network with 100,000 Lightfield images. Join an active community of fellow creators.

LeiaPlayer
Playback, quickly touch up, or even convert old 2D photos into beautiful 3D on the Lume Pad.

LeiaLink
Next gen communication app, share 3D pics and videos and chat live in 3D with any device thanks to real-time 2D3D conversion technology!

LeiaLoft Store
Experience a wide array of 3D games and apps. Get inspired and see what you can create.

LeiaCam
Paired with the Lume Pad’s hardware, capture 2D or stunning 4V / 3D photos and video.

LeiaViewer
See 3D models in a whole new way thanks to the Lume Pad. Access over 500,000 free models on Sketchfab.

LeiaFrame
Turn your device into a photo frame
We are hiring and growing…Thank you for your support!

https://www.leiainc.com  https://www.lume-pad.com/  jobs@leiainc.com