

AMOLED Manufacturing Process Report

Ver. 2

2019



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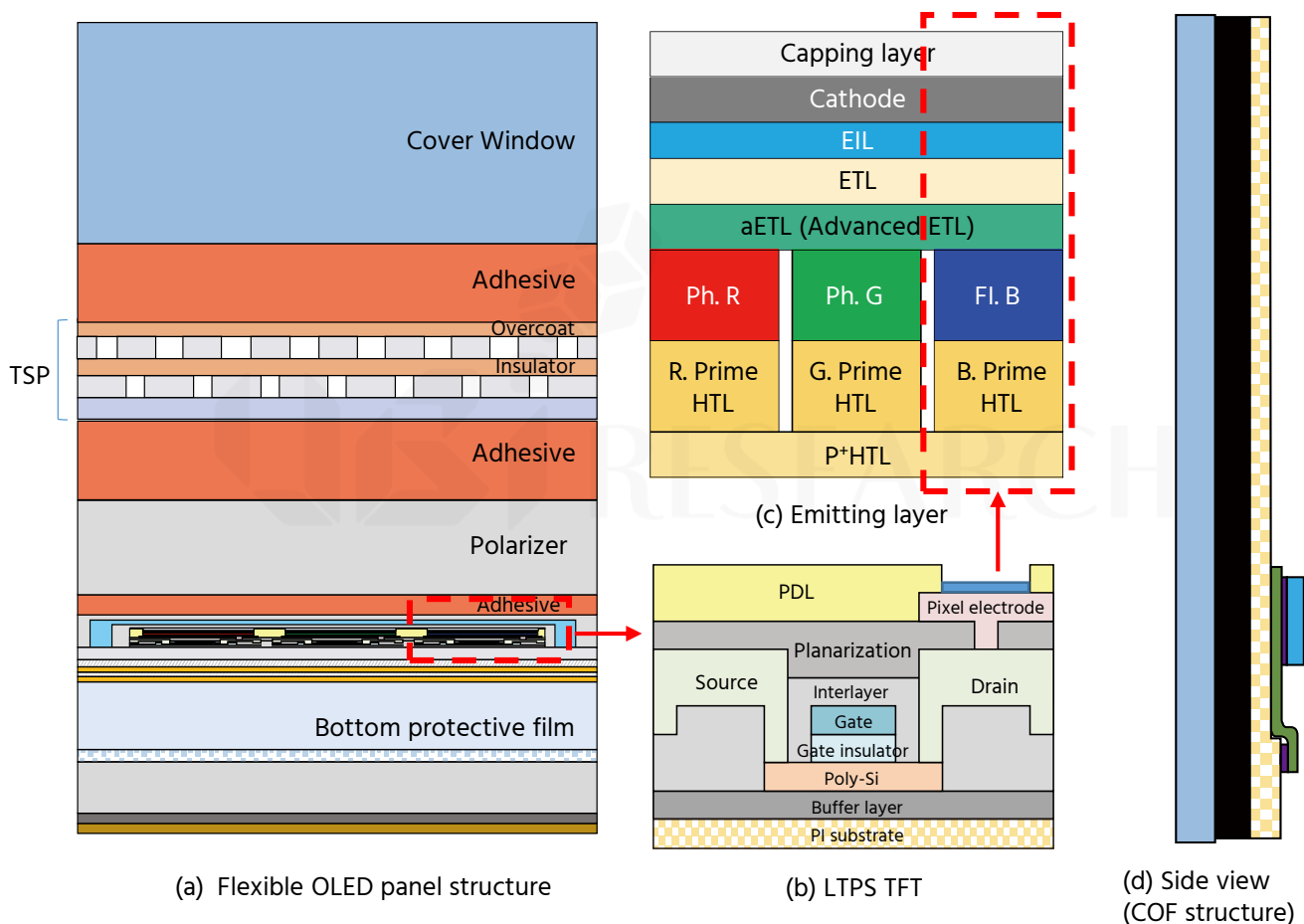
1. AMOLED Structure

1.1 Mobile device panel structure

Mobile flexible OLED panel_add on TSP

- The structure of mobile flexible OLED is generally similar to that of small and medium rigid OLEDs (TFT, polarizer, and cover window).
- Substrate changed from glass to PI, encapsulation changed from Frit to TFE (thin film encapsulation) method..
- Add-on TSP is a type of attaching a touch screen panel film on a polarizer.
- Driver IC of mobile flexible OLED is connected by FPCB, and attached by COF (chip on film) or COP (chip on plastic) method using ACF.

Structure for mobile flexible OLED panel_add on TSP


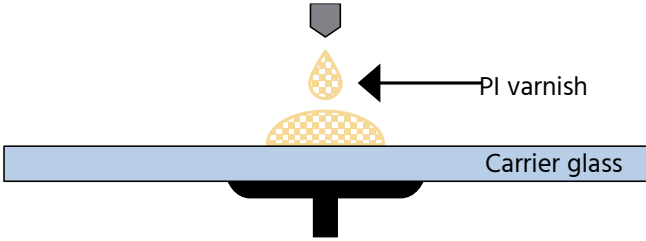
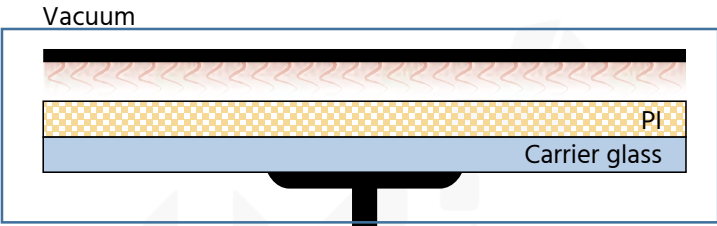
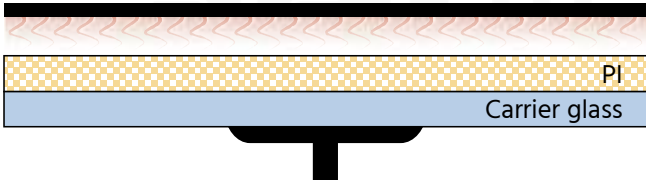
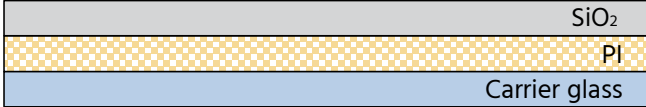
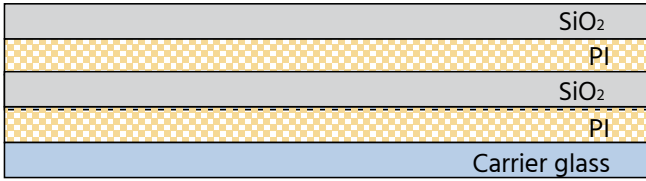


2. TFT Manufacturing Process

2.2 LTPS TFT basic manufacturing process

- Flexible substrate

LTPS TFT manufacturing process and equipment

Process		Materials	Equipment
	Cleaning	EUV, DI water	Cleaner
	PI coating	Polyimide 100um THK	Coater
	Vacuum dry	5~11 Pa 60°C	VCD
	Curing	450°C 10um THK	Curing oven
	Deposition	SiO ₂ 6000 Å	PECVD
			

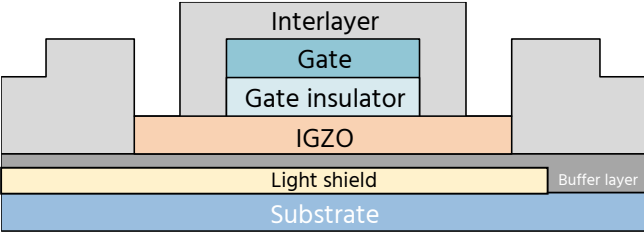
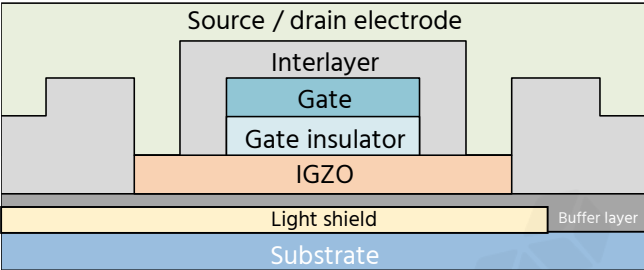
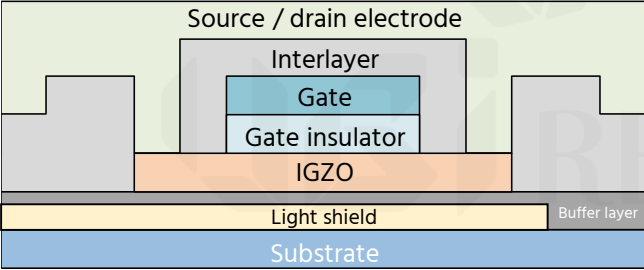
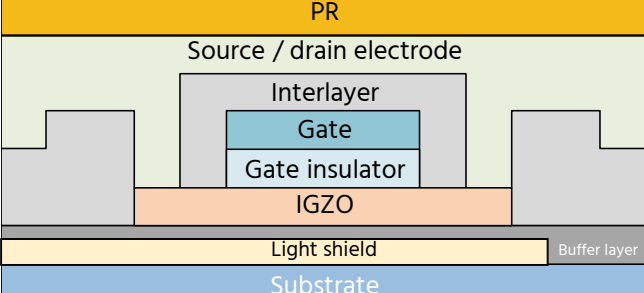
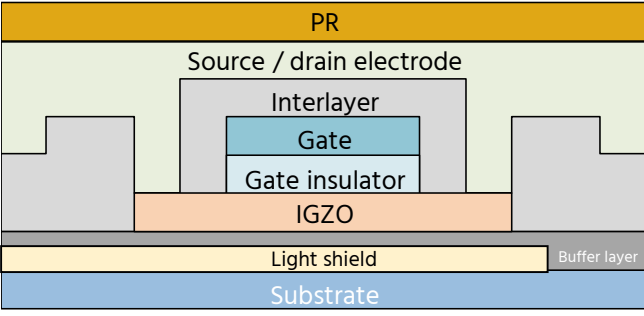
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2. TFT Manufacturing Process

2.5 LG OLEDTV's Oxide TFT manufacturing process

- Source/drain electrode deposition

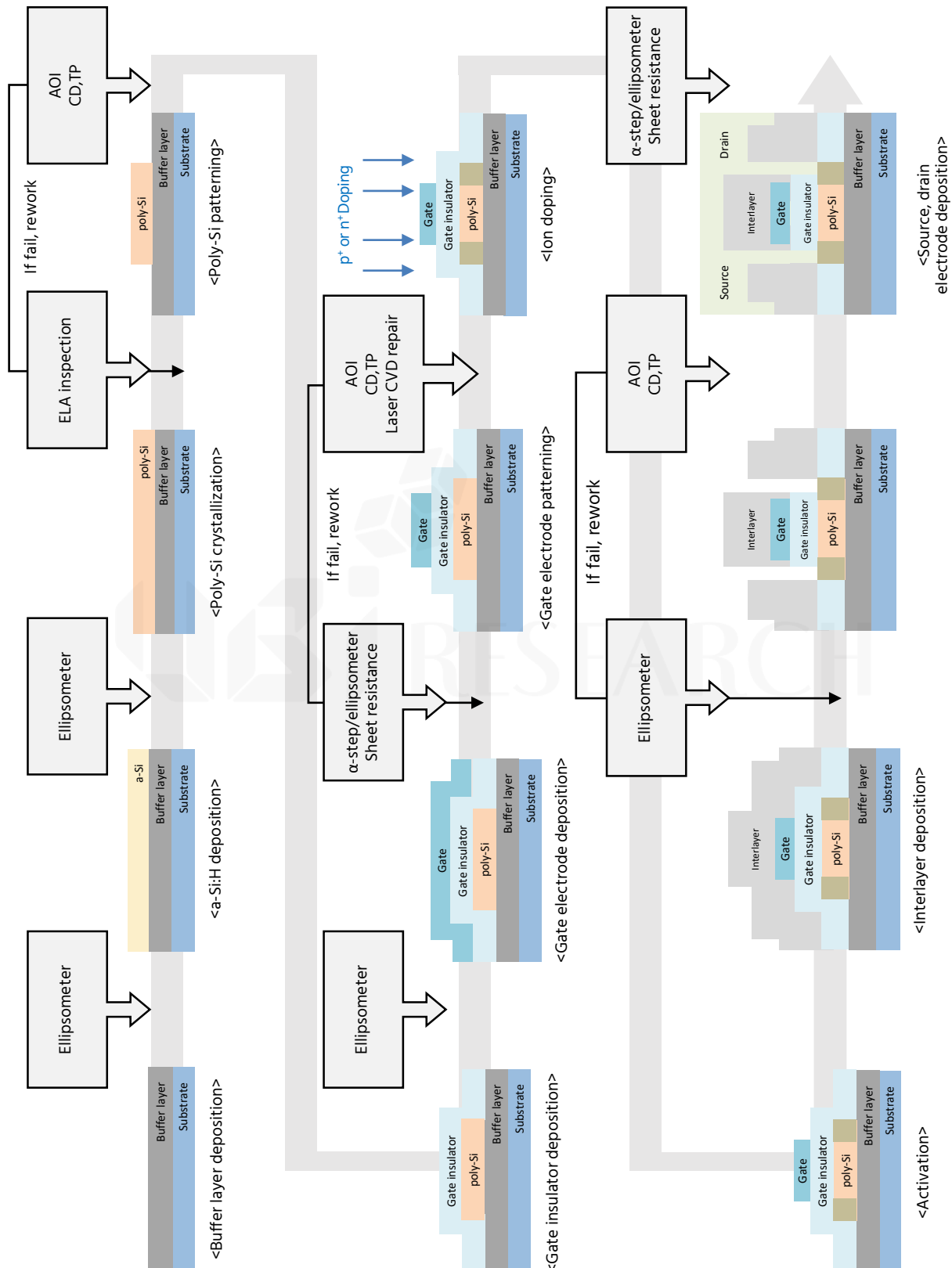
Oxide TFT manufacturing process and equipment

Process	Materials	Equipment
	EUV, DI water	Cleaner
	Ti/Al/Ti	Sputter
	EUV	Cleaner
	Positive PR : Novolac	Coater
	-	Oven

2. TFT Manufacturing Process

2.6 TFT inspection and measurement process

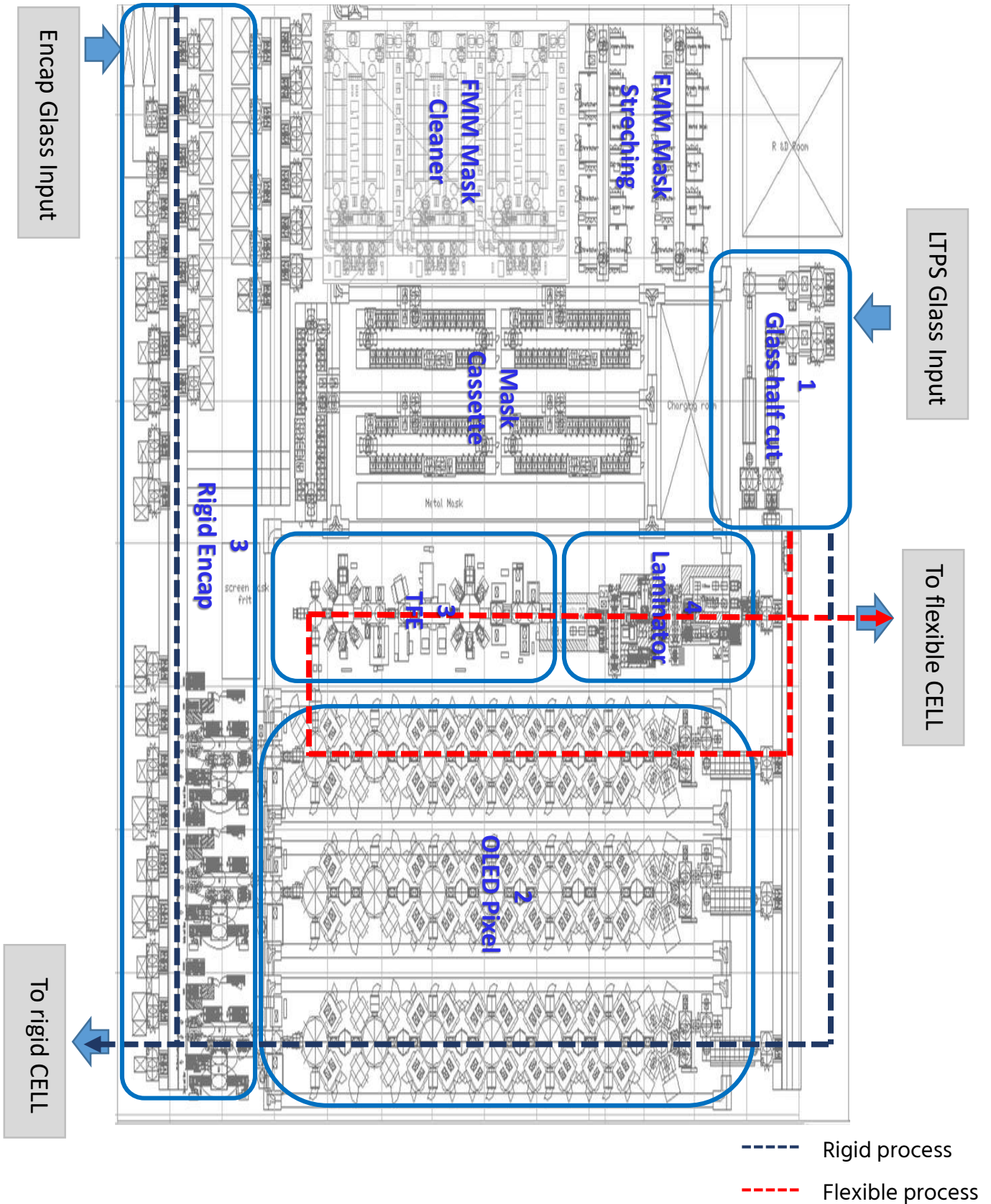
- During TFT process, α -step and ellipsometer are used to measure the thickness, AOI equipment to inspect the pattern, and laser CVD equipment to repair the TFT by detecting defects of signal line, respectively.



3. OLED Pixel and Encapsulation Manufacturing Process

3.1 OLED Pixel and Encapsulation manufacturing equipment layout

OLED Pixel and Encapsulation layout example

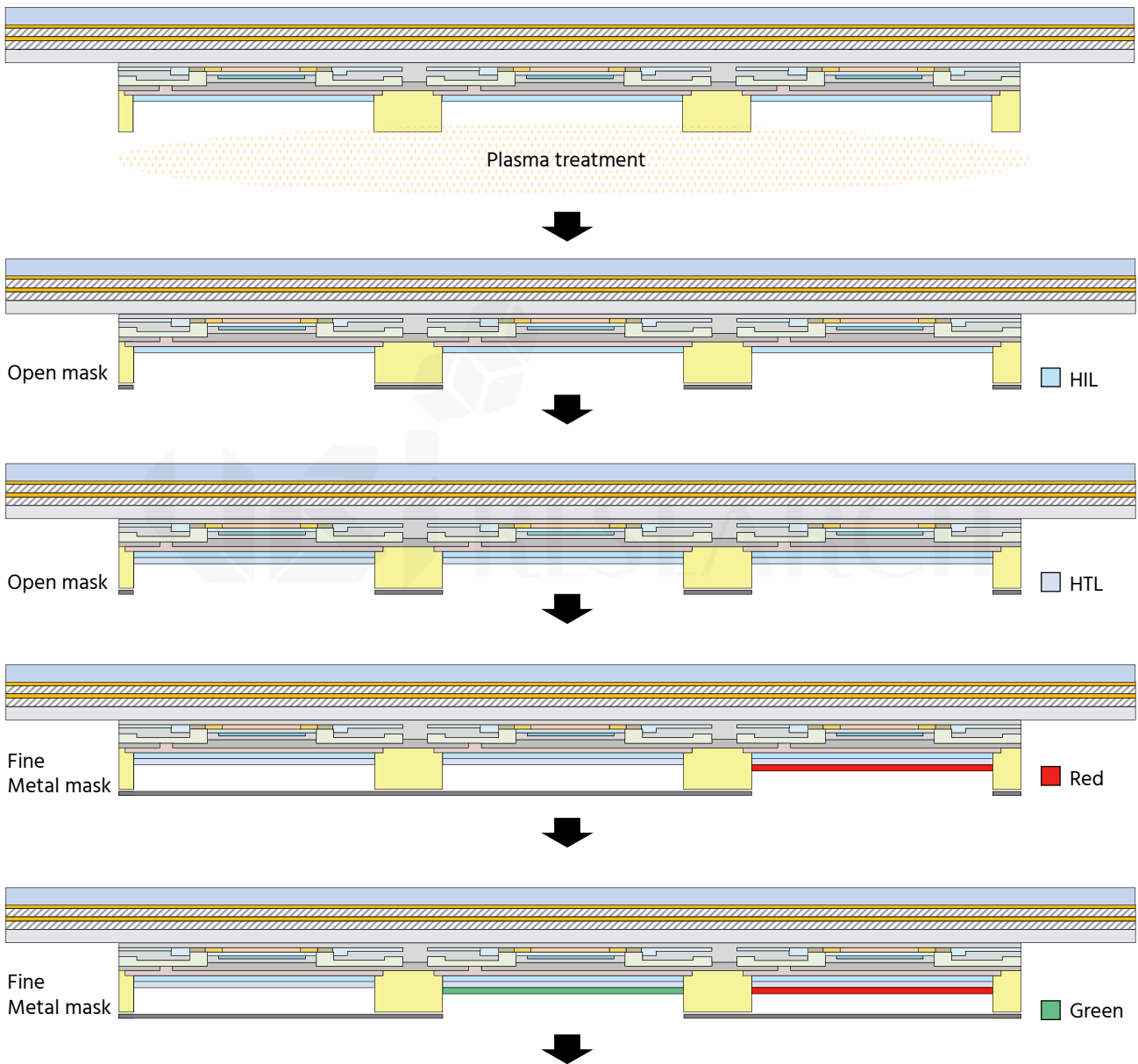


3. OLED Pixel and Encapsulation Manufacturing Process

3.2 Mobile Rigid OLED manufacturing process

OLED Pixel process

RGB OLED Pixel deposition process and equipment



Process	Equipment
O ₂ or N ₂ plasma treat	Plasma asher
HIL deposition	Evaporator (open mask)
HTL deposition	Evaporator (open mask)
Red OLED deposition	Evaporator (FMM)
Green OLED deposition	Evaporator (FMM)