

R 2

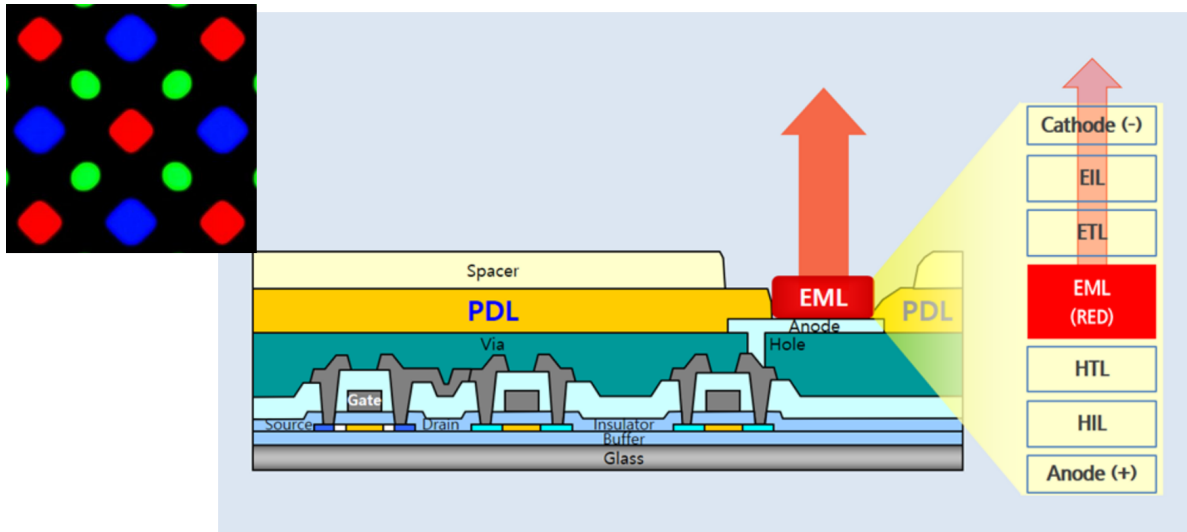
waterfirst



1 Photo

PDL CD .
OLED 2 , , Target CD 40 .
target CD R

1. CD , 2. Boxplot



07



A재료

DOE



B재료

GLASS 번호	재료	코팅두께	노광량	현상시간	경화온도
1	A	2.5	50/60/70/80	50	250
2	A	2.5	50/60/70/80	60	250
3	A	2.5	50/60/70/80	70	250
4	A	3	50/60/70/80	50	250
5	A	3	50/60/70/80	60	250
6	A	3	50/60/70/80	70	250
7	A	3.5	50/60/70/80	50	250
8	A	3.5	50/60/70/80	60	250
9	A	3.5	50/60/70/80	70	250
10					

GLASS 번호	재료	코팅두께	노광량	현상시간	경화온도
11	B	2.5	50/60/70/80	50	250
12	B	2.5	50/60/70/80	60	250
13	B	2.5	50/60/70/80	70	250
14	B	3	50/60/70/80	50	250
15	B	3	50/60/70/80	60	250
16	B	3	50/60/70/80	70	250
17	B	3.5	50/60/70/80	50	250
18	B	3.5	50/60/70/80	60	250
19	B	3.5	50/60/70/80	70	250
20					250

: https://raw.githubusercontent.com/waterfirst/Data_visualization/main/data/cd.csv

```
library(tidyverse)
```

Warning: package 'ggplot2' was built under R version 4.3.3

Warning: package 'dplyr' was built under R version 4.3.3

-- Attaching core tidyverse packages ----- tidyverse 2.0.0 --

```

v dplyr      1.1.4      v readr      2.1.5
v forcats    1.0.0      v stringr    1.5.1
v ggplot2    3.5.1      v tibble     3.2.1
v lubridate  1.9.3      v tidyr      1.3.1
v purrr      1.0.2
-- Conflicts ----- tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()     masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become

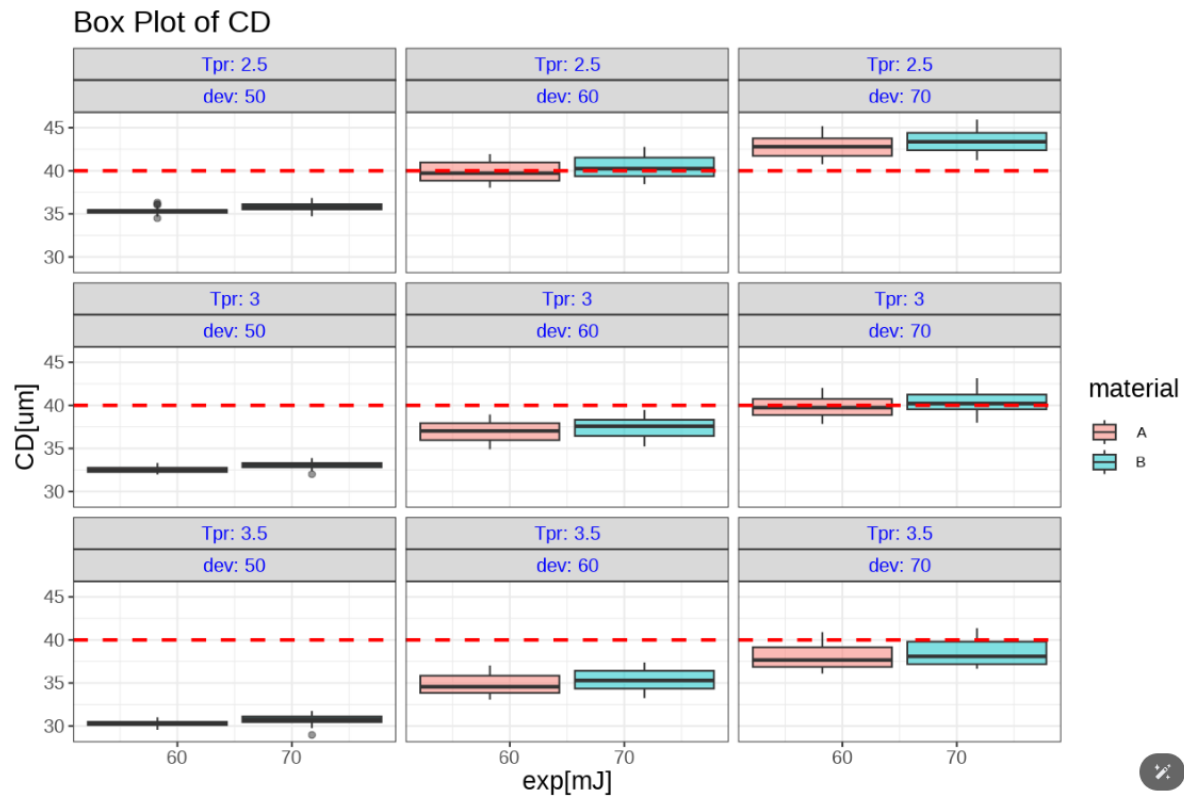
```

```

cd <- read.csv("https://raw.githubusercontent.com/waterfirst/Data_visualization/main/data/cd")
head(cd)

```

	glass	point	material	Tpr	exp	dev	cd
1	1	1	A	2.5	50	50	35.15
2	1	2	A	2.5	50	50	35.40
3	1	3	A	2.5	50	50	35.39
4	1	4	A	2.5	50	50	34.50
5	1	5	A	2.5	50	50	35.17
6	1	6	A	2.5	50	50	34.84



2 Dry

metal etch .

Recipe 5 metal etch CD . Uniformity recipe

1. Recipe CD
2. Boxplot, violin, histogram, Heat map CD MAP

: https://raw.githubusercontent.com/waterfirst/Data_visualization/main/data/dry_etch.csv

```
library(tidyverse)
dry <- read.csv("https://raw.githubusercontent.com/waterfirst/Data_visualization/main/data/dry_etch.csv")
head(dry)
```

	recipe	gas_cf4	gas_o2	pressure	time	x1	y1	cd
1	recipe1	2000	500	50	30	1	1	2.82
2	recipe1	2000	500	50	30	1	2	2.82
3	recipe1	2000	500	50	30	1	3	2.87

4	recipe1	2000	500	50	30	1	4	3.11
5	recipe1	2000	500	50	30	1	5	3.53
6	recipe1	2000	500	50	30	1	6	2.83

