









**2023**

10 19

A512

2023

2022

2023

2022

**3D**

12 10

3D

3D

3D



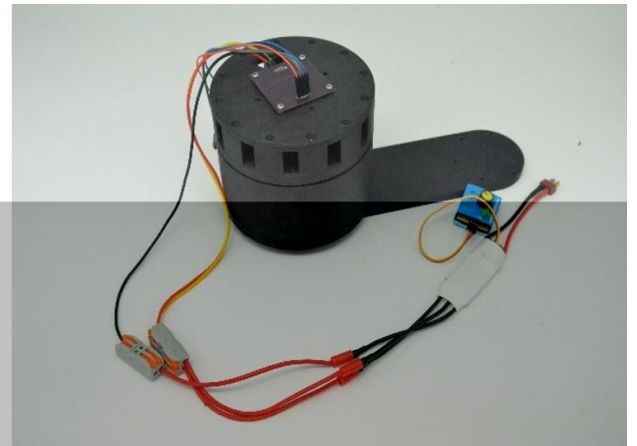
3D

20

191

37

103





3D

ABS/PC/PEEK

3D

3D

4

3D

-3D

4

CEO

3D

CEO

3D

3D

3D

L-SOP

8

57

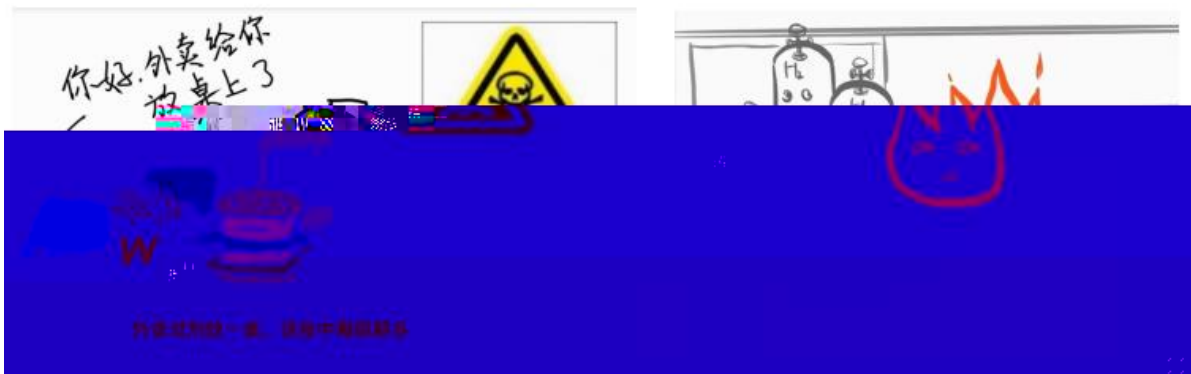
160



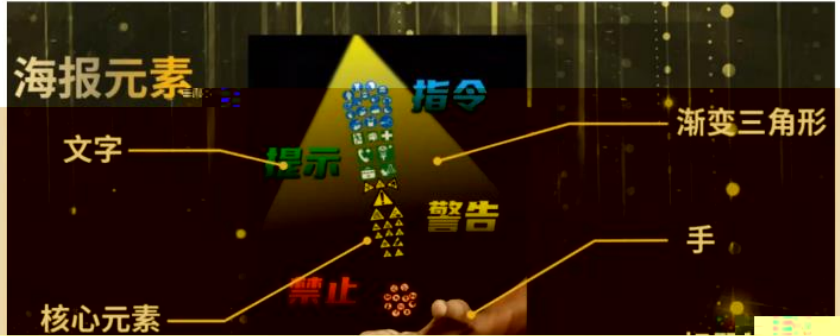
2022 7

3                      5                      9                      3                      6                      9                      8

1                      3                      5                      9                      6                      L-SOP                      2                      2



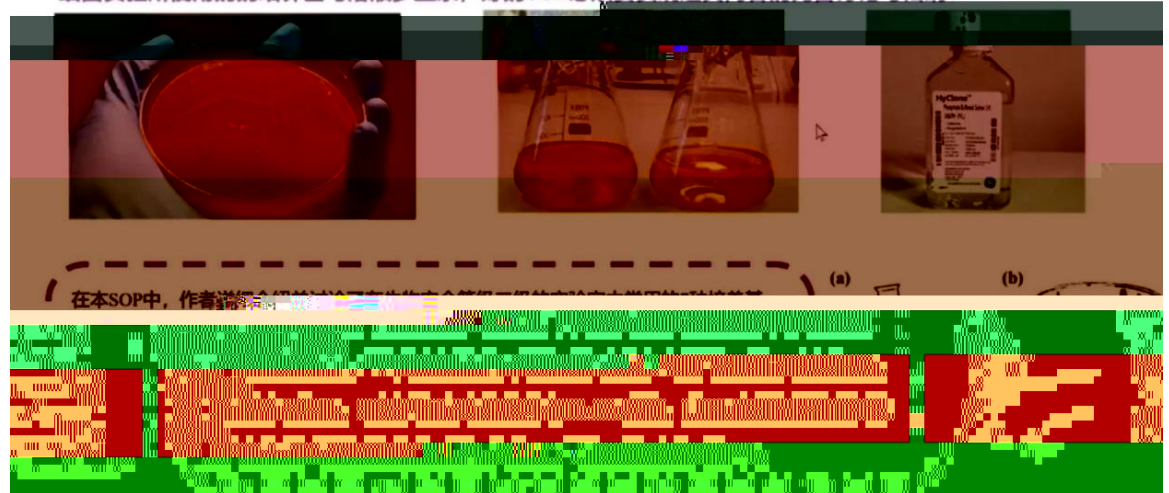




## 02 | 培养基与溶液



细菌实验所使用的的培养基与溶液多且杂，好的SOP必须要实现这类内容的完备讨论与归纳：



L-SOP

11 19

24

9

222

222

**222**

191

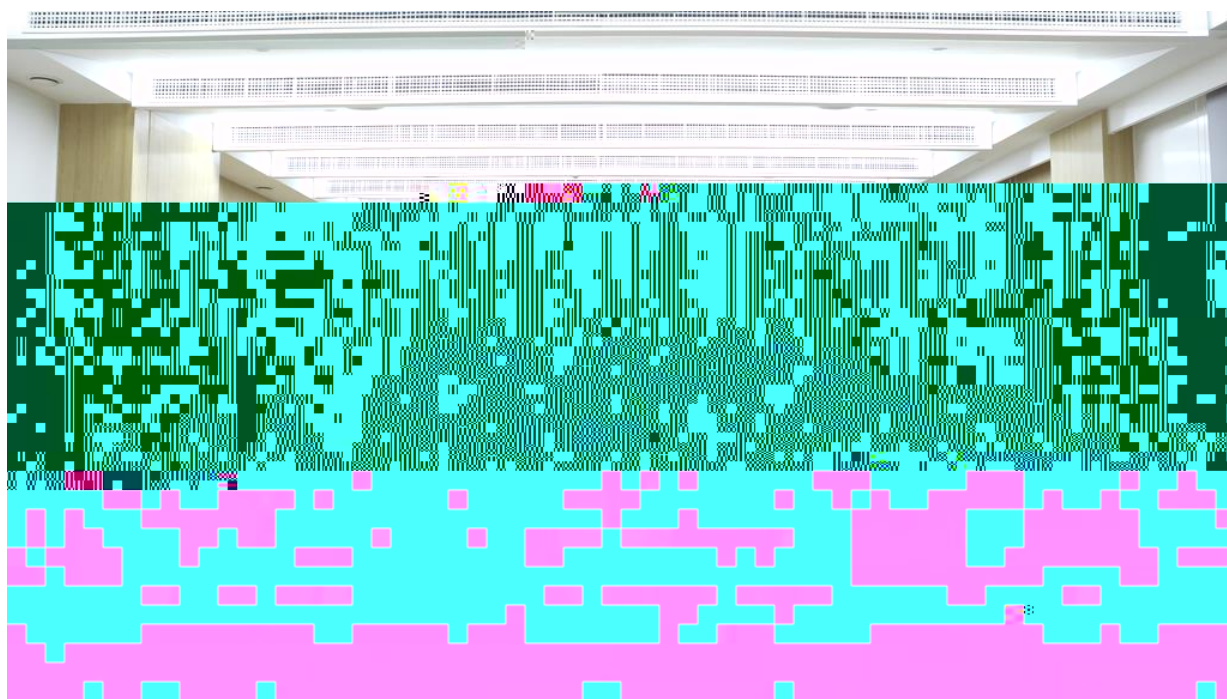
191

201

201

202

211



# 2022 IEEE Brain

CNT/IGZO CFET

RRAM

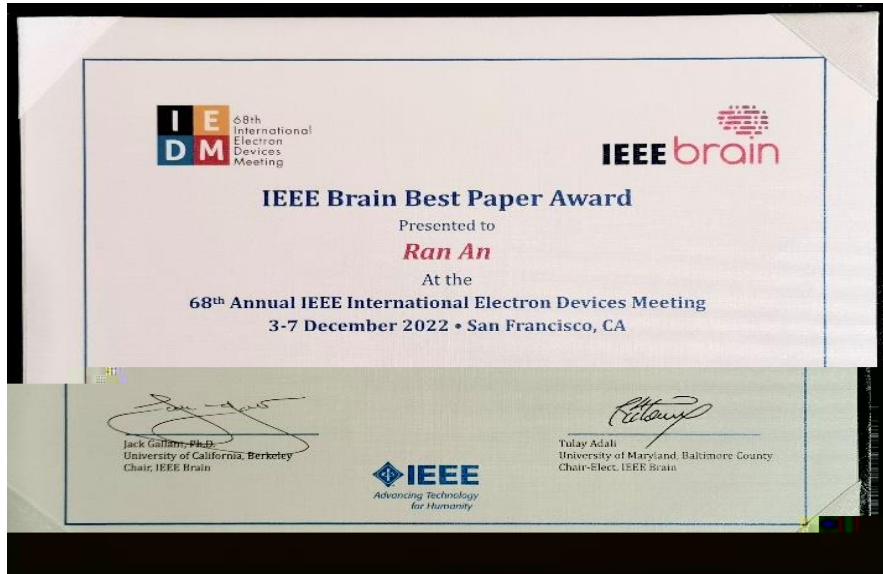
A Hybrid Computing-In-Memory Architecture by Monolithic 3D Integration of BEOL

CNT/IGZO-based CFET Logic and Analog RRAM 2022

IEEE International Electron Devices Meeting, IEDM

IEEE Brain

(IEEE Brain Best Paper Award)

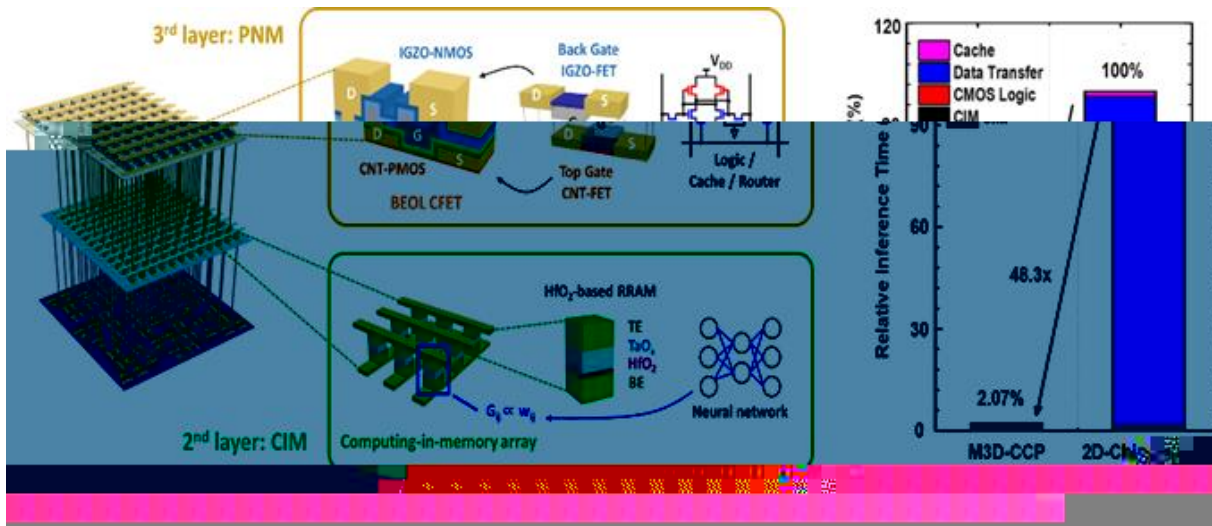


1

AI

HPC

50



2

3

130 nm

CMOS

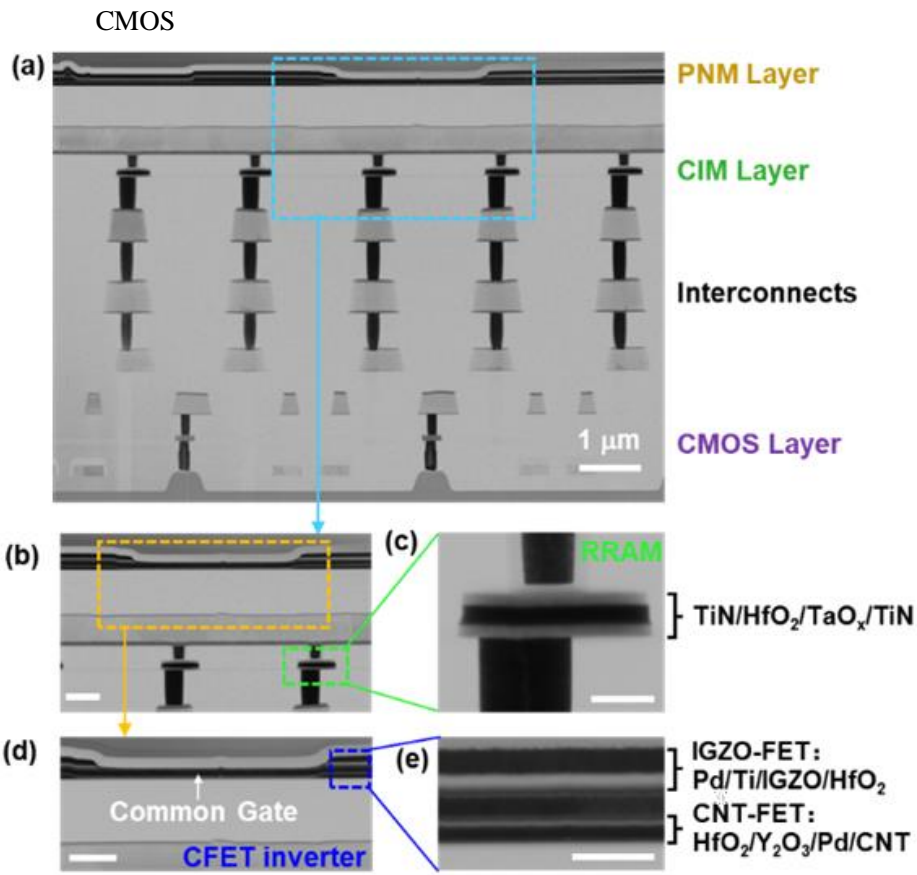
HfO<sub>2</sub> RRAM 1T1R

CNT/IGZO

CFET

SRAM

RRAM - MVM RRAM  
 MVM ReLU  
 RRAM CMOS RRAM  
 SRAM RRAM  
 RRAM  
 RRAM CNT / ILV IGZO CMOS CFET  
 CNT/IGZO CFET  
 CMOS



3 TEM (a) (b) RRAM CFET (c) HfO<sub>2</sub>  
 RRAM (d) CFET (e) CFET  
 2020 =250 nm 2019

**62783921**

**C201**