Membrane Technology and Deep Learning Applications

Vishal Nandigana

Founder, AIDesign, BlueFMa, AICartoon, BestBookRead, WellWrittenLyrics, Engineernig Documented, symbolforall, industries, Assistant Professor, Mechanical Engineering, IIT Madras, Chennai, India

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Fantasy and Artificial Life Creatures to Reality

Fantasy and Artificial Galaxies to Reality

Membrane Technology and Deep Learning Applications

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Fantasy and Artificial Life Creatures in World, Stars, Galaxies and Universe to Reality

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Membrane Technology and Deep Learning Applications

Membrane 1: MoSe$_2$/WSe$_2$ on SiO$_2$ substrate
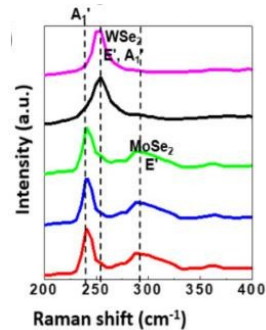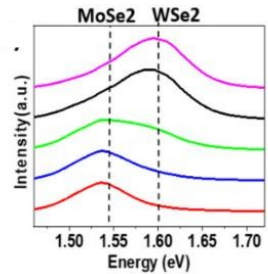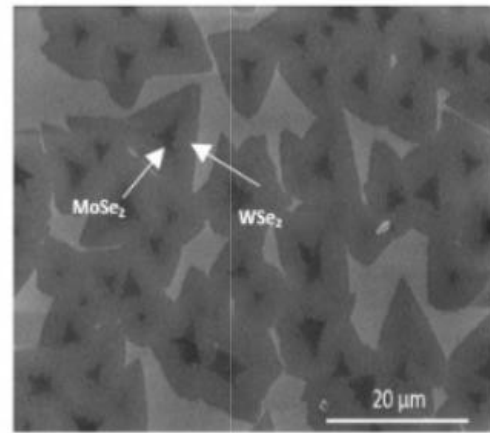
Membrane 2: MOS$_2$ on SiO$_2$ substrate

> Characteristic Raman modes of monolayer MoS$_2$,i.e. E$^1_{2g}$ and A$_{1g}$ were observed at 385 cm^{-1} and 405 cm^{-1} respectively.
> Sharp PL peak observed at 1.85 eV confirms the formation of monolayer MoS$_2$.

4

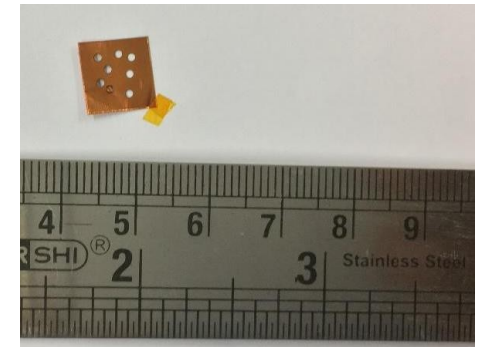# Membrane Technology and Deep Learning Applications

Membrane 3: WS$_2$ on SiO$_2$ substrate
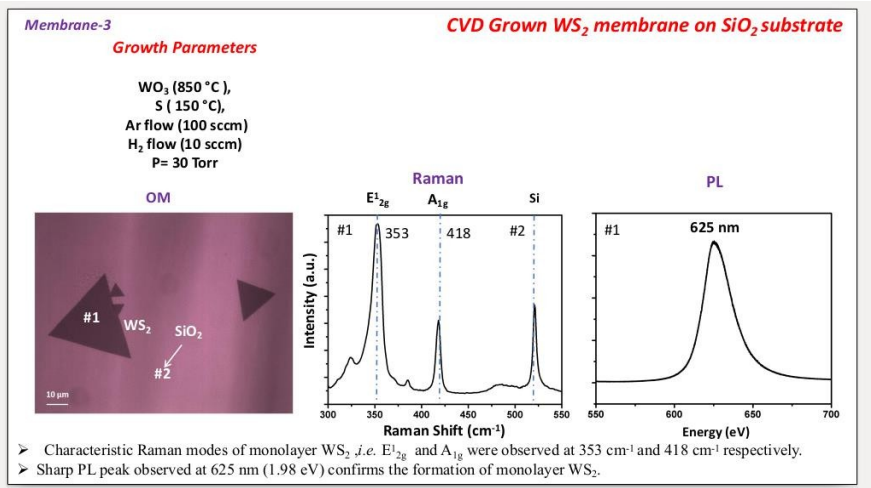
Membrane 4: Growth of Meso/MM scale (10 μm – mm size) Gr/Cu membrane with (a) single hole (b) multiple holes
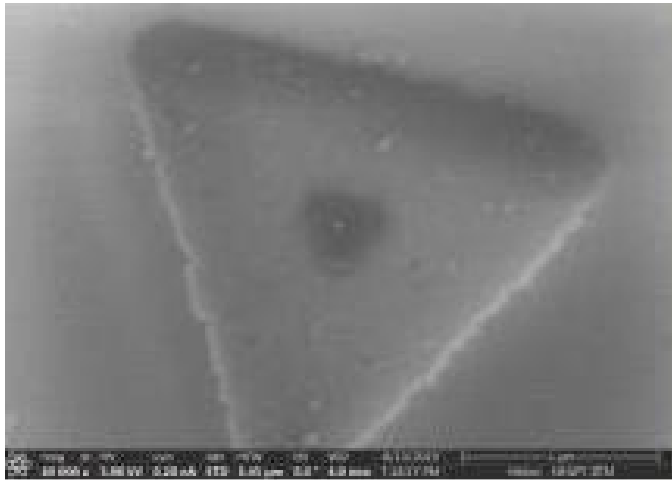

(a)

(b)

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Membrane 5: 3D nm scale SiO$_2$ membrane with nm size hole

Membrane 6: micro scale PCTE membrane with nm scale holes

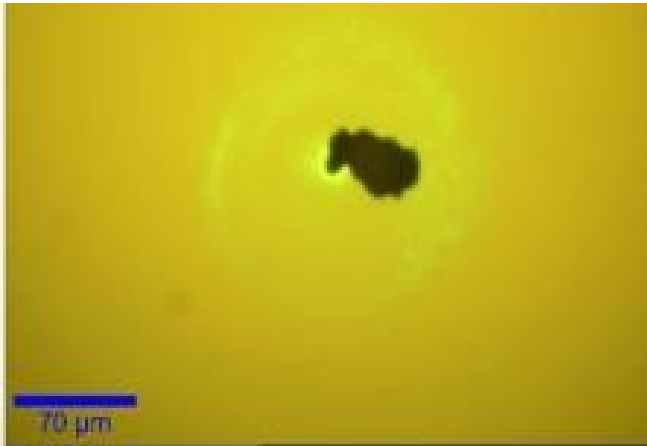**BlueFMa PVT LTD, GSTIIN, India**

Membrane 7: meso/mm scale Anodic Aluminum Oxide or AAO membrane with micro scale tortuous hole
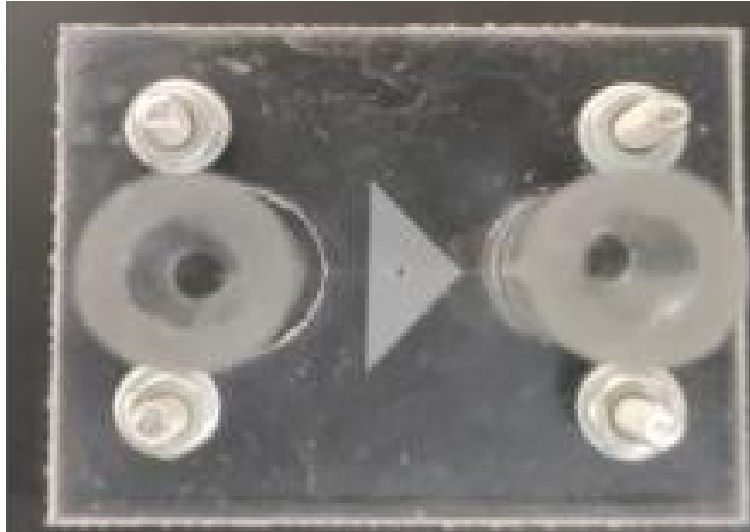

Membrane 8: MM/cm scale Silicone membrane with mm scale hole

Membrane Technology and Deep Learning Applications

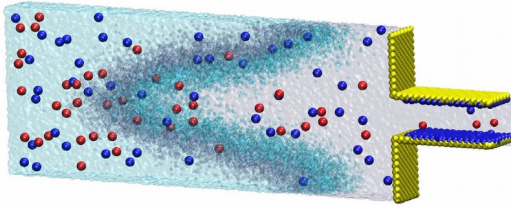**Device 1: Micro-Nano Fluidic Chip, MM scale fluid storage**

Device 2: MM/cm scale Osmotic Power Generator, large cm scale fluid storage

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Controlling fluid right, left, rotation, phase movement with voltage switch in nm scale membrane and nm channel

water is mixed controlled with voltage and tight theory

water phase is locked to ice phase

water shell is created and locked with voltage and tight theory, charge amount in nm scale membrane and nm channel is fluid/membrane/salt under use/voltage needed tight theory is available

Manikandan, D., Nandigana, V.V.R. Overlimiting current near a nanochannel a new insight using molecular dynamics simulations. Sci Rep 11, 15216 (2021).

Nandigana, V. V. R.; Heiranian, M.; Aluru, N. R.; Single Ion Transport with a Single-Layer Graphene Nanopore. Int. J. Mech. Mechatronics Eng. 2019, 13, 479– 483

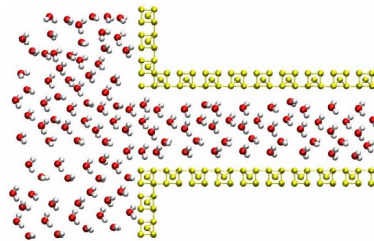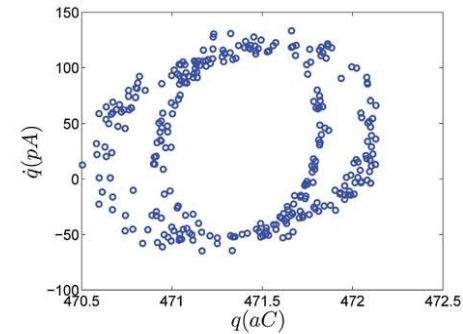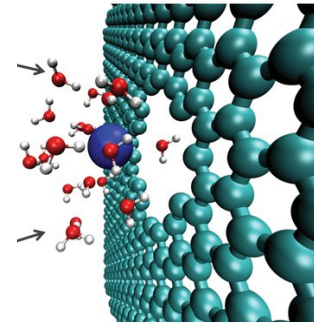Nandigana, V. V. R. & Aluru, N. R. 1/f pink chaos in nanopores. RSC Adv. 7, 46092–46100 (2017).

Membrane Technology and Deep Learning Applications
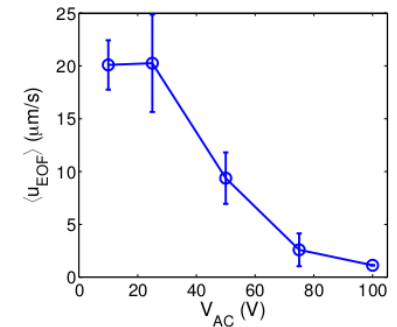
Controlling fluid right, left, rotation, phase movement with voltage switch in nm scale membrane and nm channel

Precise water pumping with voltage switch in micro/nm scale membrane with nm scale holes
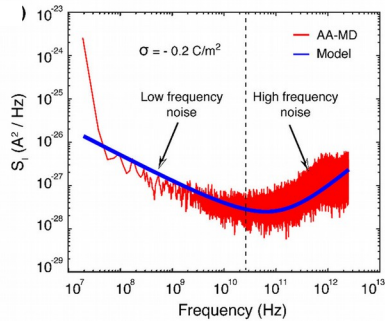
salt use transport noise, water transport noise in nm scale membrane and nm scale channel with voltage switch tight theory is available
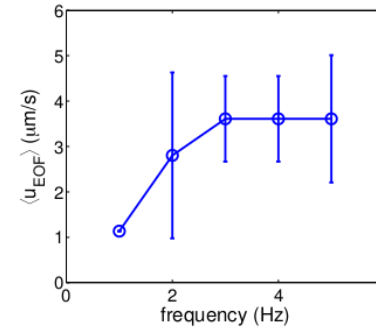
Onkar Patil, D. Manikandan & Vishal V. R. Nandigana (2020) A molecular dynamics simulation framework for predicting noise in solid-state nanopores, Molecular Simulation, 46:13, 1011-1016.

Vishal Nandigana, Sharad Kumar Yadav, Manikandan D., K. D. Jo, A. T. Timperman, N. R. Aluru (2021). AC nanopump design and manufacture. International Journal of Advance Research, Ideas and Innovations in Technology, 7(3)

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Membrane Technology and Deep Learning Applications

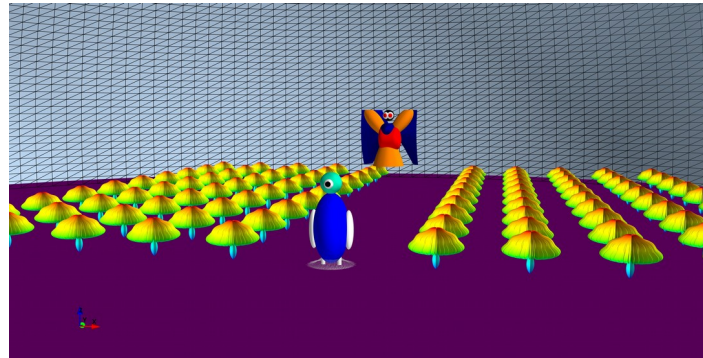**BlueFMa PVT LTD, GSTIIN, India**

salt use transport, water transport in nm/micro/meso/mm/cm scale membrane with nm/micro/meso/mm scale holes with voltage switch, signal numbers in .csv converted to English language for fluid chip talk

Signal numbers in .csv converted to .jpeg and .mp4 and .txt and English language and 3D physical manufacturing Product design cartoon/creatures/new species/new land/new space/new world/new moon/new star/new galaxies/touching the universe in scales of new manufacturing and Artificial Intelligence and Deep Learning software engineering and Technology

Sarthak Shreyas, Shriram Elangovan, Guru Viknesh, Shania Mitra, Huzaifa Mustafa Unjhawala, Naresh Kumar, Nilotpal Chakraborty, Vishal Venkata Raghavendra Nandigana, Product Design of Cartoon Characters for Software Feature Film, American Journal of Software Engineering and Applications. Vol. 10, No. 2, 2021, pp. 36-38.

Vishal Nandigana, K. Vikas Mahendar (2021). Real Electrical Signals to Text. International Journal of Advance Research, Ideas and Innovations in Technology, 7(5)

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Membrane Technology and Deep Learning Applications

3D computer/printer/computing hardware and software with AI Operating System, for Artificial life/sky/star/new stars/ galaxies/Universe 3D printing in all scales to Universe scale

AI Software visualization view of CCD camera display
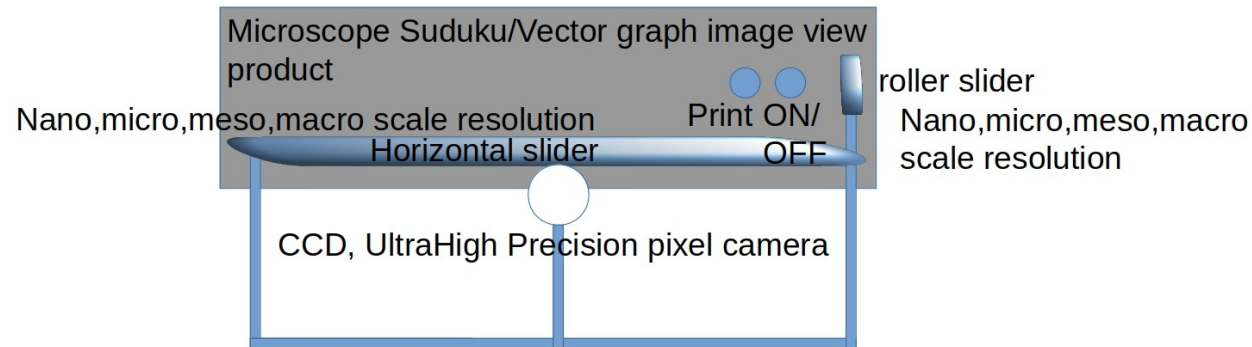
Microscope Suduku/Vector graph image view product

Nano,micro,meso,macro scale resolution

Print ON/ OFF

roller slider
Nano,micro,meso,macro scale resolution

Horizontal slider

CCD, UltraHigh Precision pixel camera

Membrane Technology and Deep Learning Applications

Fluidic Electronics

Rapid Switching using

Fluidic Diode

Fluidic Logic Gate

WATER COMPUTER

Wet inside

(a) OFF state

(b) ON state
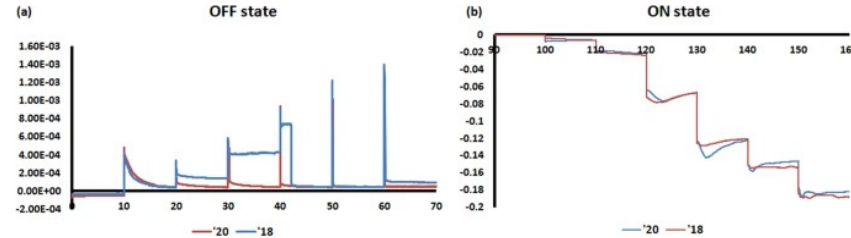
Nandigana, V.V.R., Jo, K., Timperman, A. et al. Asymmetric-Fluidic-Reservoirs Induced High Rectification Nanofluidic Diode. Sci Rep 8, 13941 (2018)

https://www.technology.org/2021/08/01/making-a-water-computer-that-actually-works/
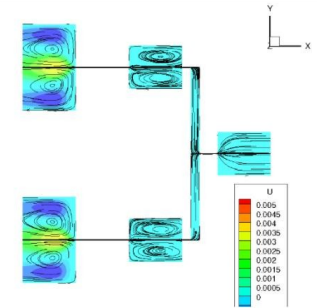
Vishal V R Nandigana, "Fluidic Electronics: Logic Gates", International Journal of Science and Research (IJSR), Volume 10 Issue 5, May 2021, 676 - 678

Fluidic Computer

Fluidic Calculator
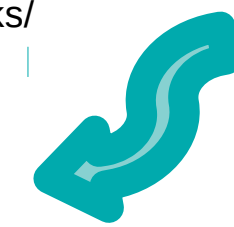
13

Fluidic Electronics: Fluidic Calculator

Working Principle of Fluidic Calculator
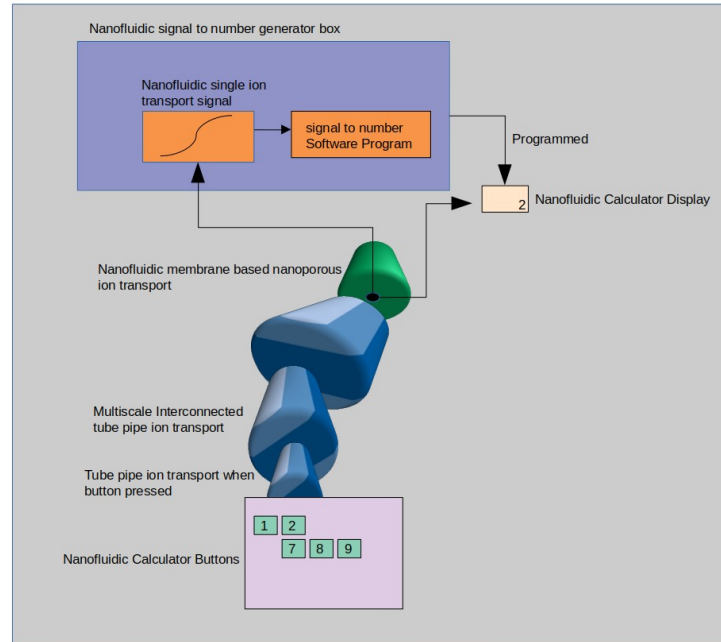
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Fluidic Electronics: Fluidic Computer

Keyboard buttons texted

Set of Software Programs Programmed ready to use
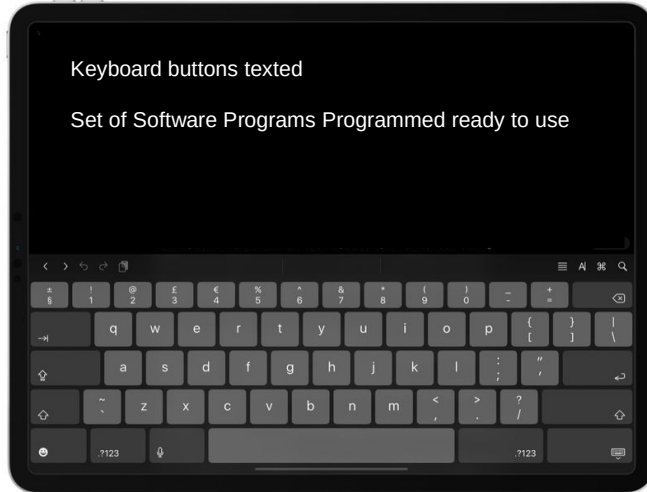
Working Principle of Fluidic Computer
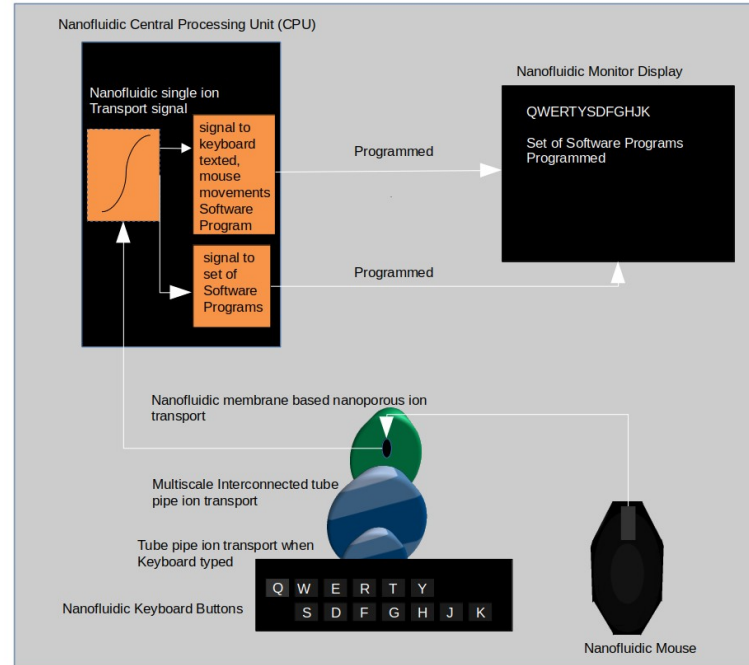
Nanofluidic Central Processing Unit (CPU)

Nanofluidic single ion Transport signal

signal to keyboard texted, mouse movements Software Program

signal to set of Software Programs

Programmed

Programmed

Nanofluidic Monitor Display

QWERTYSDFGHJK

Set of Software Programs Programmed

Nanofluidic membrane based nanoporous ion transport

Multiscale Interconnected tube pipe ion transport

Tube pipe ion transport when Keyboard typed

Nanofluidic Keyboard Buttons

Q W E R T Y
S D F G H J K

Nanofluidic Mouse

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Membrane Technology and Deep Learning Applications

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3D computer/printer/computing hardware and software with AI Operating System, for Artificial life/sky/star/new stars/galaxies/Universe 3D printing in all scales to Universe scale

Applications:

(a) Lion King Animal World Artificial Life Park

(b) Planetorium Artificial Life Sky/Stars/New Stars/Galaxies/Universe Life Material Science equal to Real Life

Sky/Stars/New Stars/Galaxies/Universe

(c) Artificial Life Material Science Products, Toys, Displays Museum

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Visual (3D .jpeg, mp4), from Gadgets TV, Computer Monitors, Laptops, Tablets, Smart Phones, to Cinema Projector screens (70 mm screen and 35 mm screen) using ViewWireless.today wireless communications technology in a room facility with audio (.mp3) in the room facility.

Wireless communications technology

Uses no wires, communicates using (x, y ,z 3D coordinates and time coordinates that is not one dimensional, but time has power law scaling dimension) and is displayed from Gadgets TV, Computer Monitors, Laptops, Tablets, Smart Phones, to Cinema Projector screens (70 mm screen and 35 mm screen) in a room facility with audio (.mp3) in the room facility.

Membrane Technology and Deep Learning Applications

AI Operating System Software Cinema Player

```
VIDEO PLAYER IS LOADED IN SOFTWARE CD 1
AUDIO PLAYER IS LOADED IN SOFTWARE CD 2
```

```
VIDEO PLAYER IS LOADED IN SOFTWARE CD 1
AUDIO PLAYER IS LOADED IN SOFTWARE CD 2
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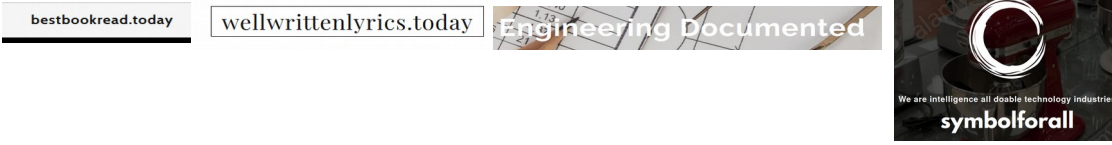
AI Operating System View Wireless Projector Display

AI Operating System Product Making Computer (PMC)

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AI Operating System Fluidic Computer

VIDEO PLAYER IS LOADED IN SOFTWARE CD 1
AUDIO PLAYER IS LOADED IN SOFTWARE CD 2

VIDEO PLAYER IS LOADED IN SOFTWARE CD 1
AUDIO PLAYER IS LOADED IN SOFTWARE CD 2
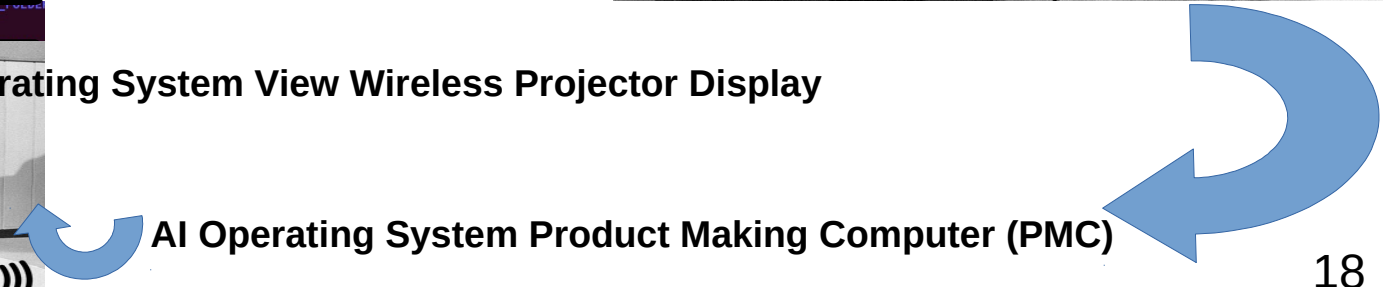
AI Operating System View Wireless Projector Display

AI Operating System design **Computer Engineering and Technology**

AI Operating System Product Making Computer (PMC)

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Membrane Technology and Deep Learning Applications

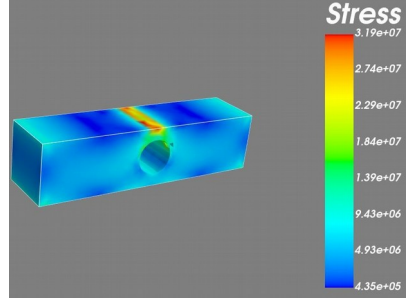**AI Operating System Fluidic Computer**

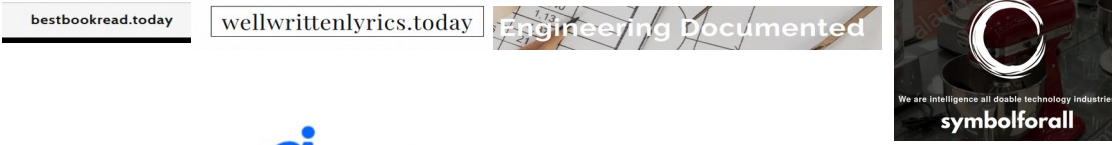**AI Operating System** design **Computer Engineering and Technology**

design **software**
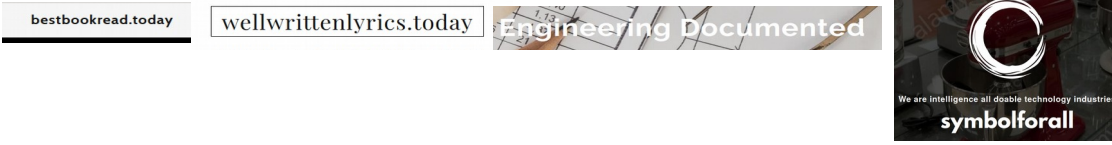
Fracture Design & Engineering

Evolution Data Science AI design
Extrapolation from Origin till Date

20

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AI Operating System **design** **Cloud Computing Room Facility**

AI Operating System **design** **Computer Engineering and Technology**

1. **Computers**
2. **Data HDDs**
3. **AC**
4. **Room**
5. **Calm Ambience with light music blues**

Nandigana, V. (2021). Multi-Scale Data Center Room for Computing and Storage. Indonesian Journal of Computer Science, 10(2).
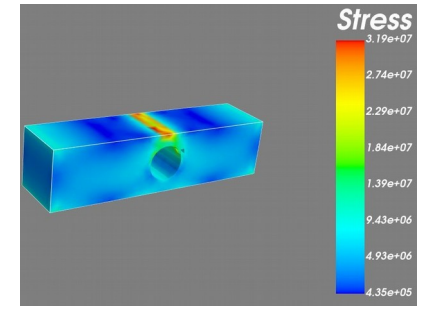
design software

File Edit View Tools Help

ToolBox
Project Schematic

Analysis Systems
Component System
Custom System
Design Exploration

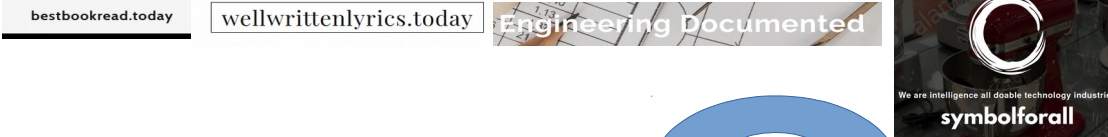Ready

Fracture Design & Engineering

Stress
3.19e+07
2.74e+07
2.29e+07
1.84e+07
1.39e+07
9.43e+06
4.93e+06
4.35e+05

Dynamics & Engineering Document Journals

Evolution Data Science AI **design** **Extrapolation from Origin till Date**
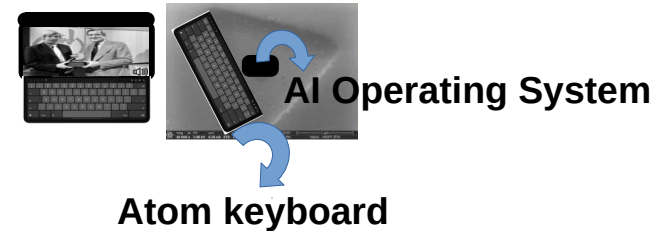
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AI Operating System Nanofluidic computer

AI Operating System

Atom keyboard

M Heiranian and N. R. Aluru Vishal Nandigana, Single layer Graphene nanopore as a nano computer, 19th International Conference on Microfluidics and Nanofluidics, Prgaue, Czech Republic, 2017

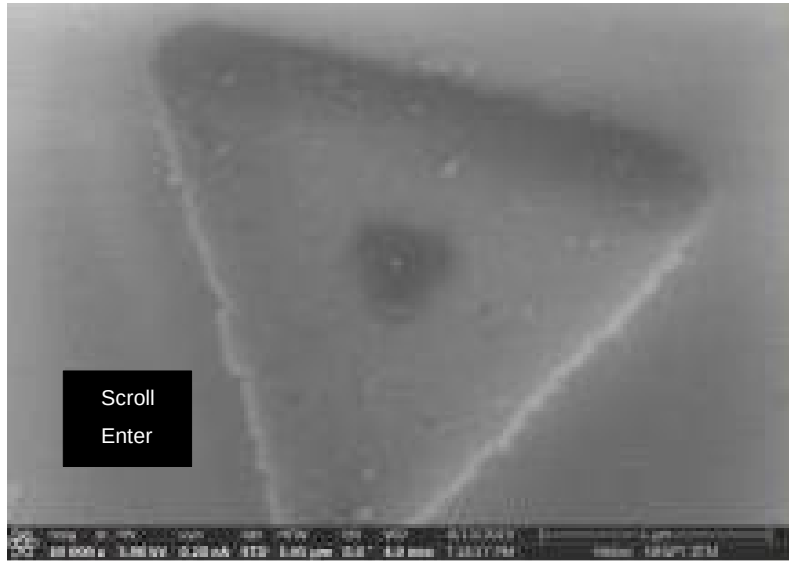**Human – Nanofluidic computer interaction**

Objective/Agendas

1. **Computer Engineering and Technology**
2. **Run Software Cinema Player**
3. **ViewWireless.today -> Run View Wireless Projector Display**
4. **Manufacture using Product Making Computer (PMC)**

Membrane Technology and Deep Learning Applications

Fluidic Electronics: Nanofluidic Computer

Working Principle of Nanofluidic Computer
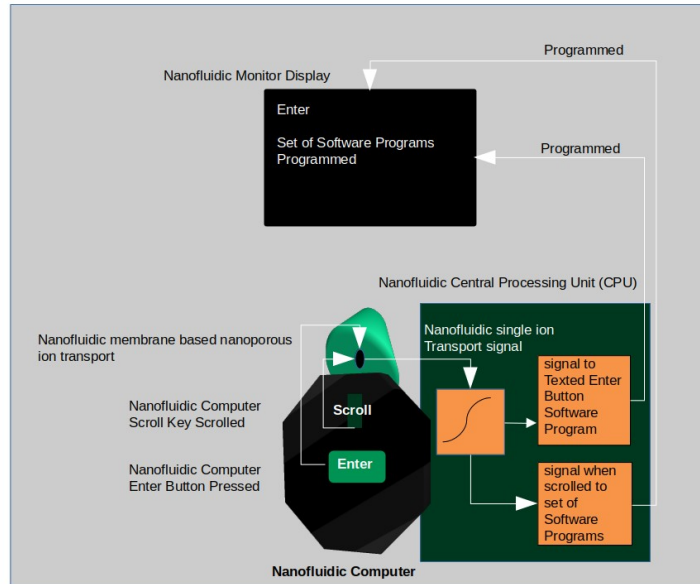
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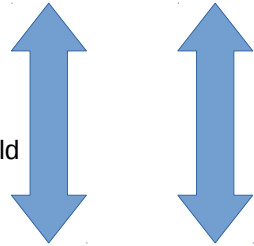
AI Operating System design Computer Engineering and Technology

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https://github.com/

Windows/Unix Operating System Open▽FOAM® Computer Engineering and Technology

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https://www.openfoam.com/