

What is OCTA

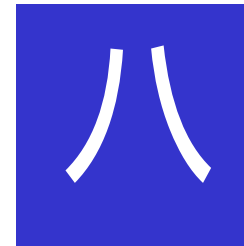
Masao Doi

OCTA

What is OCTA

- Open
- Computational Tool for
- Advanced material technology

OCTA



How OCTA has been developed

- The project “ Research and development of the platform for designing high functional materials”
- Funded by METI for 1998-2002 in totality (16 M\$)
- Conducted jointly by 11 industries and academia.

The team (1999/12/21)



Director: Masao Doi

Producer: Mototsugu Yoshida

Advanced Material Technology

■ Creating materials by design:

- Make what customers want
- With minimal time
- With minimal cost

■ Designing chemistry and process together

- Polymer film
- Micro-processing
- Nano technology

Computational Tool

- CAE(Computer Aided Engineering) Technology is
 - Indispensable in
 - Architectural engineering (buildings, bridges)
 - Mechanical engineering (aircrafts, cars)
 - Electrical engineering (processors)

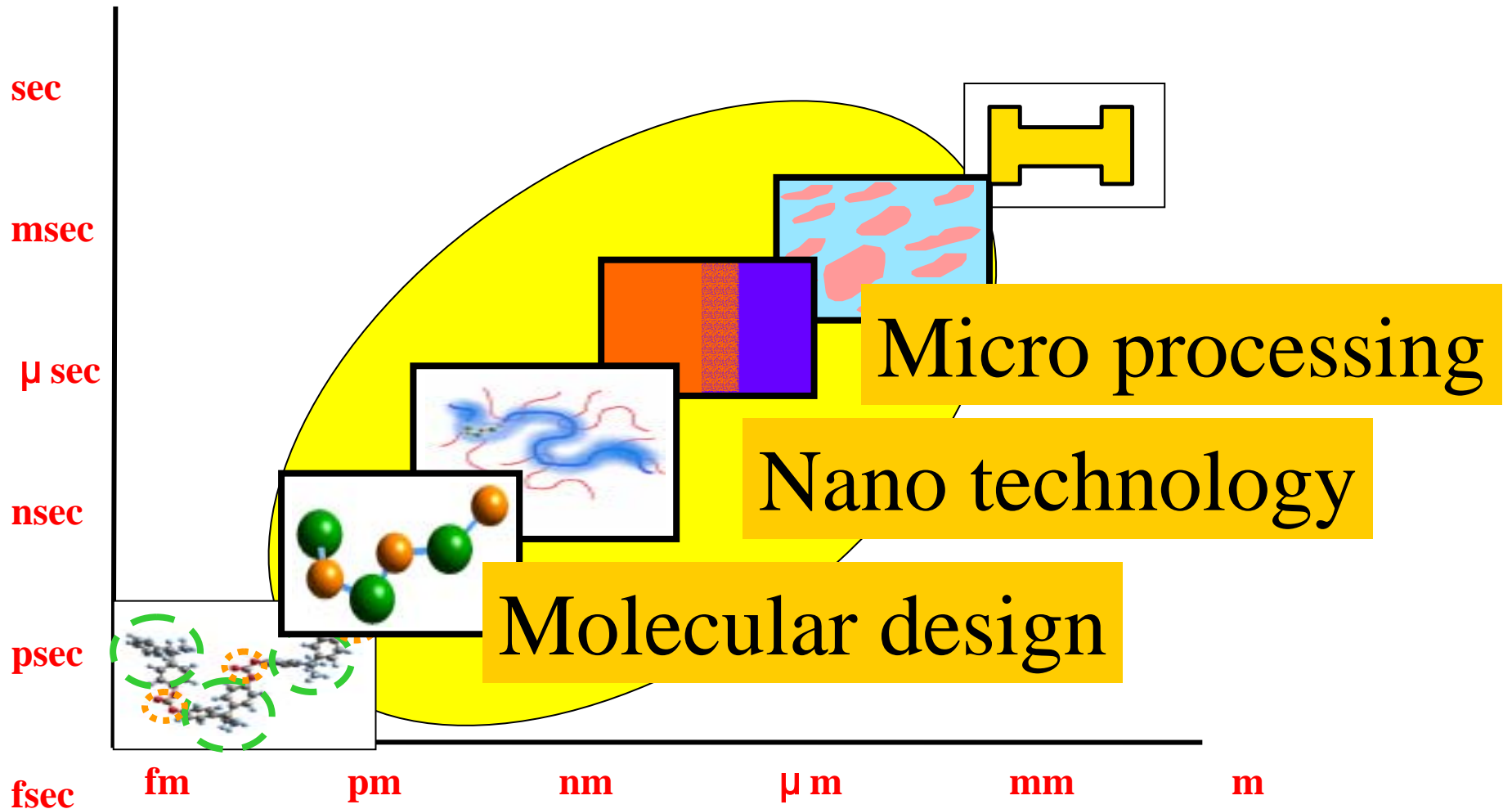
but

- Very primitive in material technology

Why?, because

- Deep gap between the micro (molecular) world and the macro (engineering) world.
- Lacking the simulation technology for meso-scale(nm- μ m) phenomena.

Ultimate form to fill the gap: “Seamless Zooming”



Open Structure of OCTA

The logo for OCTA, consisting of the letters 'O', 'C', 'T', and 'A' in a stylized, blue, serif font. The 'O' is the largest and most prominent, with the other letters following in a similar style.

Molecular
dynamics

Reptation
dynamics

Interfacial
dynamics

Micro fluidics,
Gel dynamics

A stylized tree with a brown trunk and a green canopy. The canopy is a large, light blue circle containing the word 'COGNAC' in black, serif, uppercase letters.

COGNAC

A stylized tree with a brown trunk and a purple canopy. The canopy is a large, purple circle containing the word 'PASTA' in black, serif, uppercase letters.

PASTA

A stylized tree with a brown trunk and an olive green canopy. The canopy is a large, olive green circle containing the word 'SUSHI' in black, serif, uppercase letters.

SUSHI

A stylized tree with a brown trunk and a light purple canopy. The canopy is a large, light purple circle containing the word 'MUFFIN' in black, serif, uppercase letters.

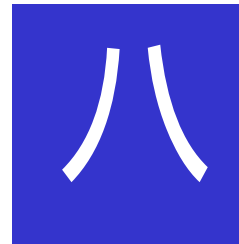
MUFFIN

A dark blue horizontal bar at the bottom of the diagram. It contains the text 'Simulation Platform' and 'GOURMET' in white, serif, uppercase letters.

Simulation Platform GOURMET

Our Design Principle for the Seamless Zooming Simulator

- The method of “zooming” is not unique: we should not impose our way.
- "Seamless zooming" is a grand challenge: we should focus on how to start such challenge, and how not to stop such challenge.
- We will make an open, flexible and expandable system, and let the system grow on its own.



What you can do with OCTA?

- Use the simulation programs in OCTA as they stand.
- Customize OCTA for your own research.
 - Interface level (Python)
 - Source code level (C++)
- Add your own programs to OCTA.
 - **UDF** (User Definable Format)
 - A format which construct a data base for your input and output file.

Simulation Platform: GOURMET

The screenshot displays the GOURMET simulation platform interface. It features several windows:

- GraphSheet:** A table showing simulation data for a pendulum. The columns are labeled 'tfloat', 'xfloat', and 'yfloat'. The data points are as follows:

tfloat	xfloat	yfloat
0.11	0.2010739	0.1074841
0.21	0.2697322	0.1930407
0.31	0.3110673	0.2590976
0.41	0.3233594	0.3010008
0.51	0.3069971	0.3162439
0.61	0.2634018	0.3034185
0.71	0.1951553	0.2621518
0.8100001	0.107105	0.1942067
0.9100001	0.007340296	0.1049053
1.0100001	-0.0822321	0.00348788
1.1100001	-0.1622321	-0.09651212
1.2100001	-0.2377679	-0.1930407
1.3100001	-0.3089327	-0.2839024
1.4100001	-0.3767679	-0.3690976
1.5100001	-0.4410673	-0.4484841
1.6100001	-0.5018327	-0.5210008
1.7100001	-0.5590976	-0.5867439
1.8100001	-0.6128594	-0.6448185
1.9100001	-0.6631553	-0.6943185
2.0100001	-0.7093594	-0.7353439
2.1100001	-0.7516732	-0.7679024
2.2100001	-0.7899971	-0.7921067
2.3100001	-0.8233594	-0.8080679
2.4100001	-0.8518327	-0.8148841
2.5100001	-0.8754018	-0.8126439
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4.4100001	-0.5594018	0.5394439
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7.9100001	1.3241053	-1.2126185
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9.2100001	1.1358071	-1.2192439
9.3100001	1.0915018	-1.1605185
9.4100001	1.0443053	-1.0938439
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10.4100001	0.9598071	-0.0598439
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Conclusion

- We think that the key to “seamless zooming” is the collaborative operation of various simulation engines.
- OCTA is intended to be a prototype of such system :we hope that it stimulates **collaboration** of various simulation engines developed in the world.
- OCTA is flexible and expandable, and can be used for education and demonstration.

Open Collaboration Tool for All !



OCTA



Waiting for you to join the table...