

Center for Research on Innovative Simulation Software

[Research and Development of Advanced Simulation used in Industry]

http://www.ciss.iis.u-tokyo.ac.jp/english/

Aiming at Innovation in MO-NO-DU-KU-RI

Advanced simulation software drastically changes engineering

For developing leading-edge technologies to simulate all processes from material development to disposal and meeting the demands of building a sustainable society, Center for Research on Innovative Simulation Software (CISS) is reconstructing and dramatically strengthening core competencies in dynamics and developing fundamental technologies that are implemented to advanced simulation software. We aim at

- ◆ Conducting world-leading advanced research on hyper-large-scale simulation software
- Strengthening the educational foundation to educate how to make and use hyper-simulation software for industrial application
- ◆ Putting R&D results in common industrial use to enhance global competitiveness of domestic engineering

Director of Center



Professor

Nobuhiro



Deputy Director of Center

Yoshitaka Professor



Professor*

Fujihiro



Marie

Professor*

SATO, **Fumitoshi**

Professor

Y. Umeno



Professor

MIZOGUCHI Teruyasu

Professor*

INOUE, Junya

OOKA, Ryozo **Professor***

Professor*



Akira **Associate** Prof.*



TOCHIGI, Eita **Associate** Prof.*

Probability and Quantum

Computational Science



Hideki **Associate** Prof.*

F. Sato

* Cooperative members

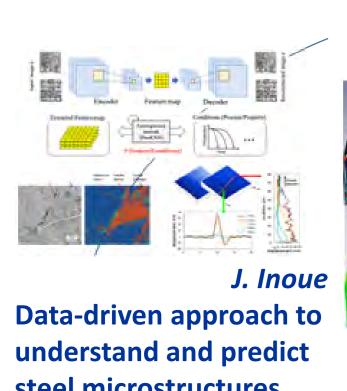
Highest occupied

insulin drawn by

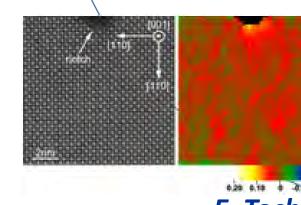
cloud-like model

molecular orbital of

Introduction of the Research

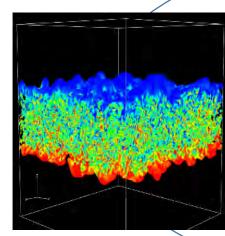


steel microstructures and their properties

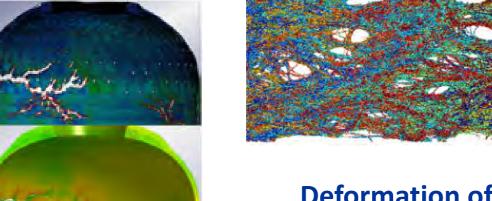


Local strain analysis based on atomicresolution in situ TEM

E. Tochigi MgO



F. Hamba **Contours of kinetic energy** of turbulent diffusion in rotating system



Function of Materials

N. Yoshikawa

Developing high

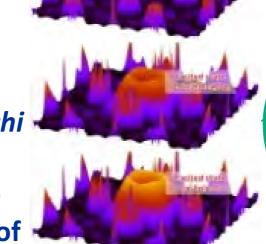
tank supported

by meso-scale

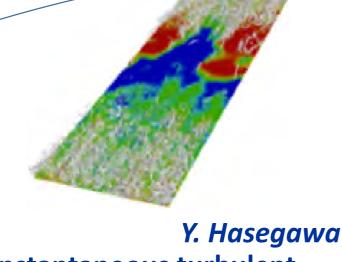
simulation

pressure hydrogen

Deformation of Polycarbonate by Coarse-Grained Particle Model Simulation



T. Mizoguchi Wave function at the bottom of the conduction band of



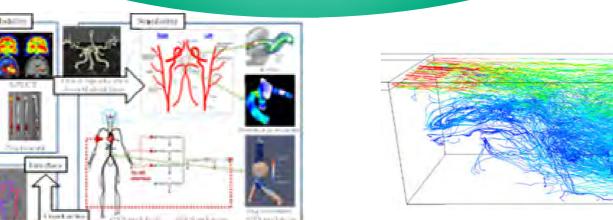
Instantaneous turbulent flow over a flat plate under optimal control for heat transfer enhancement and friction drag suppression

Development of Cutting-edge Simulation Software Packages

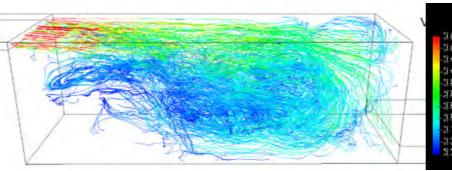


Building New Discipline of Integrated Mechanics

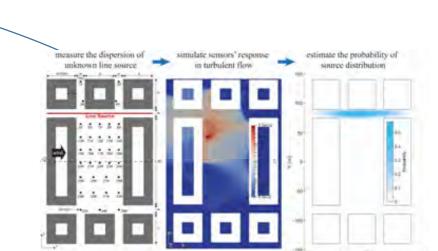




M. Oshima **Schematic of integrated simulation** system "M-SPhyR Circulation" (Multi-scale and physics simulator for circulation)



R. Ooka Analyses of flowfield in and around building using Lattice **Boltzmann Method**



A. Furukawa

particle configurations of

glass-forming liquids

under shear flow

H. Kikumoto **Identification of pollutant** sources in an urban space by applying turbulence and statistical analysis

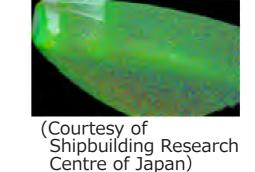
Fluid and Thermal Physics

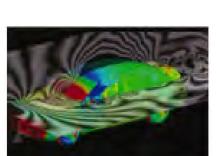
Example of Major National Project being Promoted by CISS

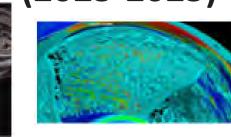
Program for Promoting Researches on the Supercomputer Fugaku:

Drastic acceleration of the industrial applications of HPC through AI and research and development of new computational methods for the next era (2023-2025)

- Overview: We will prove that industrial applications of HPC can be drastically accelerated by the use of AI and will implement the results of the research in a broad range of manufacturing fields. In addition, we will develop new computational methods, which will serve as the basis for the HPC in the next era.
- Responsible organization: The Univ. of Tokyo; Kobe Univ.; Toyohashi Univ. of Tech.; Nihon Univ.; Meiji Univ.; RIKEN; Shipbuilding Research Centre of Japan.; Honda R&D Co.,Ltd.







Leading Institute

