

CAMT Seminar

“Temporal Multiscale Algorithm for Efficient Hybrid Plasma Fluid Model and Gas Flow Simulations Using Finite-Volume Method”

Prof. Jong-Shinn Wu

Department of Mechanical Engineering,
National Chiao Tung University
Hsinchu, TAIWAN

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Location: Meeting Room 1&2, 2nd Floor (2F), Bldg.

Office for Industry-University Co-Creation (Bldg. D)

(産連本部 D 棟 2F 会議室 1&2)

(#50 of map: <https://www.osaka-u.ac.jp/en/access/suita/suita.html>)

Abstract

A temporal multi-scale algorithm (TMA) for efficient fluid modeling of gas discharges is proposed in this talk. TMA, which is an efficient hybrid numerical algorithm, combines a parallel plasmas fluid modeling and a parallel gas flow solver that was developed APPL (Aerothermal & Plasma Physics Laboratory), which both employed cell-centered finite-volume method. This algorithm intends to greatly reduce the computational time of multidimensional modeling gas discharges to an acceptable runtime, considering the effect of mutual interaction between gas flow and gas discharge. A one-dimensional helium dielectric barrier discharge considering the impurities is used to verify the efficiency of the proposed TMA. In the end, an axisymmetric two-dimensional argon discharge is demonstrated.

(Host: Satoshi Hamaguchi Ext:7913)