

AUTHORS — NOVEMBER 1992

PLASMA ENGINEERING

ION TAIL FORMATION AND ITS EFFECT ON 14-MeV NEUTRON GENERATION IN D-³He PLASMAS / *Hideaki Matsuura, Yasuyuki Nakao, Kazuhiko Kudo*

Hideaki Matsuura (top) (MS, nuclear engineering, Kyushu University, Japan, 1988) is working on his PhD thesis on plasma kinetic characteristics in burning reactor plasma. Since 1991, he has worked at Kyushu University as a research associate. His main work interests include advanced-fuel fusion studies. **Yasuyuki Nakao** (center) (Dr, nuclear engineering, Kyushu University, Japan, 1981) is an associate professor of nuclear engineering at Kyushu University. His current research interests include nuclear processes in dense plasma systems, neutron and charged-particle transport problems, and kinetics of thermonuclear burning. **Kazuhiko Kudo** (bottom) (PhD, engineering, Kyushu University, Japan) is a professor at Kyushu University. His current interests are reactor control systems, gas-cooled reactors, and advanced-fuel fusion reactors.



IMPROVEMENT OF TOKAMAK PLASMA SHAPE IDENTIFICATION WITH A LEGENDRE-FOURIER EXPANSION OF THE VACUUM POLOIDAL FLUX FUNCTION / *Kenichi Kurihara*

Kenichi Kurihara (BS, nuclear engineering, University of Tokyo, Japan, 1979) is a research scientist at the Japan Atomic Energy Research Institute. He has worked on design studies and analyses for the JT-60 plasma equilibrium control system.



TRANSMUTATION OF HIGH-LEVEL FISSION PRODUCTS AND ACTINIDES IN A LASER-DRIVEN FUSION REACTOR / Nikolai G. Basov, Nikolai I. Belousov, Peter A. Grishunin, Vladimir V. Kharitonov, Vladislav B. Rozanov, Valery I. Subbotin

Nikolai G. Basov (top right) [Moscow Engineering Physics Institute (MEPI), USSR] is director of the Quantum Radiophysics Division of the P. N. Lebedev Physical Institute. He received the Nobel Prize for the invention of the laser and maser. His current interests are the fundamental problems of quantum radiophysics and electronics, lasers and their applications, and laser fusion. **Nikolai I. Belousov** (top left) (MEPI, 1982) is a research associate at MEPI. His professional interests are inertial confinement fusion (ICF) reactor engineering problems, hybrid blankets, and waste transmutation. **Peter A. Grishunin** (center right) (MEPI, 1979) is a research associate at MEPI. His professional interests are high-power optics in an ICF reactor environment, hybrid ICF reactors, and waste transmutation. **Vladimir V. Kharitonov** (bottom left) (MEPI, 1969) is a professor at MEPI. His interests include nuclear fusion power, thermal physics, and direct energy conversion. **Vladislav B. Rozanov** (bottom right) (Moscow State University, USSR) is head of the Laser Plasma Theory Department of the P. N. Lebedev Physical Institute. His main interests are plasma physics, laser fusion and its applications, thermonuclear energy, and laser fusion research problems. **Valery I. Subbotin** (no photograph available) (Baku Industry Institute, USSR) is a professor at the Obninsk Physics and Energy Institute. He is a distinguished expert in nuclear power, one of the designers of the sodium breeder reactor.



PARTICLE EXHAUST SCHEME USING AN IN-VESSEL CRYOCONDENSATION PUMP IN THE ADVANCED DIVERTOR CONFIGURATION OF THE DIII-D TOKAMAK / M. M. Menon, P. M. Anderson, C. B. Baxi, A. Langhorn, J. L. Luxon, M. A. Mahdavi, Peter K. Mioduszewski, L. W. Owen, M. J. Schaffer, K. M. Schaubel, J. P. Smith

M. M. Menon (top right) (PhD, electrical engineering, University of Waterloo, Canada, 1973) is a member of the research staff at Oak Ridge National Laboratory (ORNL), where he has worked on the development and application of neutral beams for fusion plasma heating. He is currently on assignment at General Atomics, working on the particle exhaust scheme for DIII-D. **P. M. Anderson** (top left) (BS, 1966, and MS, 1969, mechanical engineering, San Diego State University) joined the Fusion Division of General Atomics in 1979. He has been manager of mechanical engineering for DIII-D since 1985. He conceived the design of a cryopump made from concentric tube sections with a concentric helium flow circuit. **C. B. Baxi** (center right) (PhD, mechanical engineering, University of Michigan, 1971) joined the Fusion Division of General Atomics in 1983. He has been responsible for all thermal-hydraulic work done on DIII-D. He has also worked on the Compact Ignition Tokamak (CIT), the International Thermonuclear Experimental Reactor (ITER), and the Joint European Torus (JET). **A. Langhorn** (bottom left) (HNC, mechanical engineering, Merton Polytechnic, United Kingdom, 1972) is currently an independent consultant specializing in cryogenics. As DIII-D fluid systems coordinator and principal engineer in charge of cryogenics at General Atomics, he was responsible for the initial cryogenic design of the ADP cryopumping system. Biographies and photographs of **J. L. Luxon** and **M. A. Mahdavi** were unavailable. **Peter K. Mioduszewski** (bottom right) [BS, physics, University of Bonn, Federal Republic of Germany (FRG), 1965; MS,



physics, University of Marburg, FRG, 1969; and PhD, physics, Technical University of Aachen, FRG, 1971] joined the Fusion Energy Division of ORNL in 1980. He is currently group leader and program manager of the edge plasma and particle control program at ORNL, where he is involved in divertor, pump limiter, and plasma boundary studies in collaborative programs on Tore Supre, DIII-D, and TEXTOR. A biography and photograph of **L. W. Owen** were not available. **M. J. Schaffer** (top) (ScD, electrical engineering science, Massachusetts Institute of Technology, 1966) is a senior staff scientist in the DIII-D Boundary Physics and Technology Division at General Atomics. He previously worked on the Ohmically Heated Toroidal Experiment (OHTE), imploding linear physics and reactor studies, relativistic beam-plasma experiments, and the design of Doublet-III. **K. M. Schaubel** (center) (BS, mechanical engineering, San Diego State University, 1984) joined the General Atomics Fusion Division in 1984. He is currently in charge of DIII-D cryogenics. He has worked on superconducting magnet design and neutral beamline engineering. **J. P. Smith** (bottom) (BS, mechanical engineering, University of Notre Dame, 1984; MS, mechanical engineering, San Diego State University, 1991) joined the General Atomics Fusion Division in 1983 and was the lead design engineer for the first wall and divertor plates for DIII-D. He is now a project leader for the DIII-D advanced divertor program, which includes both the biasing and the cryopump systems.



BLANKET ENGINEERING

NEUTRONIC SENSITIVITY ANALYSIS OF THE EXPERIMENTAL TEST REACTOR TIBER II BLANKET DESIGN / *Zaphar-Ullah Koreshi, Asaf Kinrot, Jeffery D. Lewins*

Zaphar-Ullah Koreshi (no photograph available) (PhD, Cambridge University, United Kingdom) has studied Monte Carlo methods for fusion blanket analysis. He is now associated with the Pakistan Nuclear Institute. **Asaf Kinrot** (top) (BSc, physical chemistry, Technion Israel Institute of Technology, Israel, 1962; MSc, physical chemistry, Weizmann Institute of Science, Israel) is a member of the Reactor Physics Group at the Nuclear Research Center-Negev, where he works on neutron and gamma-ray transport, radiation shielding, and optimization studies for fusion reactor designs. **Jeffery D. Lewins** (bottom) (PhD, Massachusetts Institute of Technology; PhD, Cambridge University, United Kingdom; DSc, University of London, United Kingdom) is lecturer in nuclear engineering in the Engineering Department of the University of Cambridge and director of studies in engineering and management for Magdalene College, where he has held a fellowship since 1985. His research interests have centered on variational and perturbation methods in neutron transport, but also include reliability studies, heat transfer, reactor kinetics, and thermodynamics.



PLASMA ENGINEERING

FUSION ENERGY PRODUCTION DURING ION INJECTION INTO A NON-NEUTRAL PLASMA / *Carlos A. Ordonez*

Carlos A. Ordonez (BS, 1984, and PhD, 1990, physics, University of Texas-Austin) is an assistant professor of physics at the University of North Texas. His research interests include energetic ion energy loss processes in plasmas and solids, plasma/surface interactions, and neutron generators.



COLD FUSION

TRITIUM PRODUCTION BY ELECTROLYSIS OF HEAVY WATER / *Chun-Ching Chien, Theresa Chen Huang*

Chun-Ching Chien (right) (BSc, chemistry, Fu-Jen Catholic University, Taiwan, 1971; MS, 1975, and PhD, 1988, chemistry, National Taiwan University, Taiwan) has research interests in the areas of analytical chemistry and electrochemistry. **Theresa Chen Huang** (BSc, chemical engineering, Cheng Kung University, Taiwan, 1963; PhD, chemistry, University of Pennsylvania, 1970) is a senior scientist at the Institute of Nuclear Energy Research in Taiwan. She is responsible for chemistry and technology research related to nuclear water reactors.



THE FLEISCHMANN-PONS PHENOMENON—A DIFFERENT PERSPECTIVE / *M. K. S. Ray, R. D. Saini, D. Das, G. Chattopadhyay, R. Parthasarathy, S. P. Garg, R. Venkataramani, B. K. Sen, T. S. Iyengar, K. K. Kutty, D. N. Wagh, H. N. Bajpai, C. S. P. Iyer*

M. K. S. Ray (top right) [BE, chemical engineering, Jadavpur University, India, 1968; Bhabha Atomic Research Center Training School (BARCTS), India, 1969] specializes in the conceptualization, design, and development of processes and systems. He led the team that designed India's first plant for vitrification of high-level radioactive wastes. His current interest is material science relative to cold fusion phenomena. **R. D. Saini** (top left) (MSc, chemistry, Agra University, India, 1967; BARCTS, India, 1969; PhD, chemistry, University of Bombay, India, 1989) specializes in radiation and photochemistry, chemical kinetics, and instrumentation. His current research interest is in the gas-phase reactions of hydroxyl radicals with hydrofluorocarbons and hydrofluoroethers. **D. Das** (second from top right) (MSc, chemistry, Calcutta University, India, 1973; BARCTS, India, 1974; PhD, physical chemistry, University of Bombay, India, 1985) specializes in materials science, high-temperature thermochemistry, and electron beam optics. He is especially interested in the development of the conceptual foundation of quantum phenomena. **G. Chattopadhyay** (second from top left) (MSc, chemistry, University of Kalyani, India, 1966; BARCTS, India, 1969; PhD, chemistry, University of Bombay, India, 1978) specializes in phase diagrams and thermodynamic studies at high temperatures and solid electrolyte galvanic cells. His current research is in alloy systems. **R. Parthasarathy** (third from top right) (BSc, University of Madras, India, 1959; BARCTS, India, 1960; MSc, 1971, and PhD, 1986, University of Bombay, India) specializes in the neutron activation analysis technique and its application in the forensic, geological, biological, and materials sciences. **S. P. Garg** (third from top left) (MSc, physical chemistry, Allahabad University, India, 1966; BARCTS, India, 1967; PhD, chemistry, University of Bombay, India, 1980) specializes in phase diagrams, thermodynamics, and process metallurgy of high-temperature refractory materials. He is currently leading a team for studies on the thermochemistry of carbide fuels for fast breeder reactors and the development of processes for extraction and refining of zirconium- and niobium-based alloys. **R. Venkataramani** (fourth from top right) (MSc, physical chemistry, University of Bombay, India, 1965; BARCTS, India, 1966) specializes in thermochemistry and process metallurgy of high-temperature refractory materials. His current interests include characterization of superconducting oxides and kinetic studies of the oxidation of nickel- and zirconium-based alloys. **B. K. Sen** (bottom left) (MSc, chemistry, Patna University, India, 1973; BARCTS, India, 1975) has developed tritiated polymers for tritium-activated luminous compounds and light sources. He has also been involved in the development and assay of tritium-labeled compounds. **T. S. Iyengar** (bottom right) (MSc,



physics, Kerala University, India, 1958; BARCTS, India, 1959; PhD, physics, University of Bombay, India, 1979) specializes in tritium measurement techniques and liquid scintillation spectrometry. He currently leads a team for the development of radiation protection instrumentation. **K. K. Kutty** (top right) (BSc, chemistry, University of Bombay, India, 1975) works in the fields of chemical dynamics, thin-film coating, and scanning electron microscopy. **D. N. Wagh** (top left) (BSc, chemistry, 1979, and BEd, 1981, Poona University, India; MSc, University of Bombay, India, 1990) works in the fields of chemical assay of metals and alloys and X-ray fluorescence spectrometry. **H. N. Bajpai** (bottom right) (MSc, chemistry, Lucknow University, India, 1964; BARCTS, India, 1965) is experienced in classical and instrumental methods of analysis and specializes in low-energy spectrometry. **C. S. P. Iyer** (bottom left) (MSc, chemistry, University of Travancore, India, 1954; PhD, chemistry, University of Bombay, India) specializes in instrumental methods of analysis, environmental chemistry, and modeling. He is currently an advisor in the Department of Ocean Development of the Regional Research Laboratory at Trivandrum, India.



FRACTOFUSION MECHANISM / *Kyuichi Yasui*

Kyuichi Yasui (BS, physics, Waseda University, Japan) is currently a second-year postgraduate student.

