

激光篇

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以激光惯性聚变为动力 源制备氢的可行性研究

Feasibility of Hydrogen Production Using Laser Inertial Fusion as Power Source



Key Words:

**Electrolysis (HTE)
High Average Power
Laser (HAPL)
High Temperature
Hybrid Sulfur (HyS)
Hydrogen
Laser Inertial Fusion
Energy (IFE)
Sulfur-Iodine (SI)
Thermochemical
Water-splitting**

Retention: Permanent

**FEASIBILITY OF HYDROGEN PRODUCTION USING LASER INERTIAL FUSION AS
THE PRIMARY ENERGY SOURCE (U)**

Maximilian B. Gorenssek

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Washington Savannah River Company
Savannah River Site
Aiken, SC 29808

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SAVANNAH RIVER NATIONAL LABORATORY

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REVIEWS AND APPROVALS

Maximilian B. Gorensek, Author, Computational and Statistical
Science

Date

Melvin R. Buckner, Technical Reviewer, Energy Security

Date

Steven J. Hensel, Manager, Computational and Statistical Science

Date

William A. Summers, Hydrogen Program Manager, Energy
Security

Date

Benjamin J. Cross, Nuclear Energy Program Manager, Energy
Security

Date

Paul F. Cloessner, Manager, Homeland and National Security

Date

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LIST OF ACRONYMS

Ca-Br	Calcium-Bromine (cycle)
DEMO	ITER experiemnt Demonstration Reactor
DT	Deuterium-Tritium
DOE	United States Department of Energy
DOE-NE	United States Department of Energy, Office of Nuclear Energy, Science & Technology
Flibe	34% BeF ₂ , 66% LiF salt mixture
FLiNaK	46.5% LiF, 11.5% NaF, 42% KF salt mixture
FS	Ferritic Steel
FTF	Fusion Test Facility
FW	First Wall
GA	General Atomics Corporation
H ₂	Hydrogen
H2-MHR	Hydrogen Modular Helium Reactor
H ₂ O	Water
HAPL	High Average Power Laser
HCPB	Helium-Cooled Pebble Bed
HI	Hydrogen Iodide
HHV	Higher Heating Value
HTE	High Temperature Electrolysis
HyS	Hybrid Sulfur (cycle)
IFE	Inertial Fusion Energy
IHX	Intermediate Heat Exchanger
I-NERI	International Nuclear Energy Research Initiative
I ₂	Iodine
ITER	International Thermonuclear Experimental Reactor
JAEA	Japanese Atomic Energy Agency
Li	Lithium
LLNL	Lawrence Livermore National Laboratory
NHI	Nuclear Hydrogen Initiative
NRC	National Research Council
NRL	Naval Research Laboratory
O ⁼	Oxide anion
O ₂	Oxygen
ODS	Oxide Dispersion-Stabilized
Pb-17Li	83% lead, 17% lithium eutectic alloy
PEM	Proton Exchange Membrane
PPPL	Princeton Plasma Physics Laboratory
R&D	Research and Development
RWTH	Rheinisch-Westfälische Technische Hochschule (Rhine-Westphalian University of Technology)
SDE	SO ₂ -Depolarized Electrolysis
SI	Sulfur-Iodine (cycle)

SiC	Silicon Carbide
SiC _f /SiC	Silicon-Carbide-fiber-reinforced Silicon-Carbide-matrix composite
SNL	Sandia National Laboratories
SO ₂	Sulfur Dioxide
SRNL	Savannah River National Laboratory
UCSD	University of California, San Diego
UT-3	University of Tokyo – 3
WNA	World Nuclear Association

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