



International Virtual Laboratory Environmental Technology (IVLET) Revisited: A Focus on Hydrogen

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Background

- International Virtual Laboratory Environmental Technology (IVLET) concept was introduced at the October 18–21, 2004, International Science and Technology Center (ISTC) meeting in Moscow
- The IVLET concept presented was very broad in scope
- Our Russian colleagues suggested more focus
- We are proposing an initial focus on hydrogen to support the world-wide interest in a hydrogen-based energy economy

The Elements of IVLET with a Hydrogen Focus

- IVLET will focus on scientific information exchange and collaboration via information technology
- A computer based information exchange network will make available basic information on hydrogen research and development (R&D)
 - Production
 - Storage
 - Purification
 - Transmission/Transportation
 - Safety
 - Conversion to electrical, heat, and chemical energy
- U.S. and Russia will provide data bases

Mode of Operation

- Timely basic R&D information will be exchanged via modern information exchange technology
- Collegial discussions of technical questions via “chat room” format
- Participation in real time planning and execution of experiments and interpretation of experimental results

Potential Technical Areas for Collaboration

- Electrolytic and thermochemical hydrogen generation
- Fuel cell membranes
- Practical catalysts for ion and electron transport through fuel cell membranes
- Hydrogen separation and purification technologies
- Systems for safe and inexpensive high-density storage of hydrogen
- Hydrogen purification
- Hydrogen transmission and transport
- “Logistics” of a hydrogen economy

Issues/Opportunities

- **Issues**

- Obtaining funding
- Protecting proprietary information
- Agreeing on details of technical collaboration
- Establishing a secure computer network
- Establishing a formal arrangement for implementation of IVLET

- **Opportunities**

- Exchange of basic technical information
- Exchange of scientists
- A pilot IVLET program involving Oak Ridge National Laboratory (ORNL) and other U.S. national laboratories and Russian collaborators
- Include other collaborators as appropriate

Action Items for Russia

- Prepare a proposal to obtain funding from ISTC
- Establish and organizational “home” for IVLET in Russia
- Participate with ORNL in setting up an IVLET organizational management structure
- Participate with ORNL in setting up an information management structure
- Participate with ORNL in establishing adaptable and flexible protocols for information exchange
- Participate with ORNL in establishing information protection