Background

This dispute concerns the alleged failure by the Maryland Division of Rehabilitation Services, the State licensing agency (SLA), to properly administer the Randolph-Sheppard Vending Facility Program by prohibiting the State Committee of Blind Vendors (Committee), who are the complainants in this case, from using allocated funds to pay legal expenses. As a result, the Committee maintained that it had been restricted in participating in the administration of the SLA's Randolph-Sheppard Vending Facility Program pursuant to the provisions of the Act (20 U.S.C. 107 *et seq.*) and the implementing regulations in 34 CFR part 395.

A summary of the facts is as follows: In August 1997 the Committee voted to ask for an increase in its budget, which included funds for legal counsel. In a letter dated September 18, 1997, to the Committee, the SLA denied the increase stating three reasons, which were—(1) no significant revenue enhancements had been demonstrated for the FY 1998 and FY 1999 budget year; (2) many of the major budget items were driven by the settlement agreements; and (3) the SLA's Randolph-Sheppard Vending Facility Program had significantly reduced program costs by eliminating two positions. The SLA further stated that, based on a review of the Randolph-Sheppard Vending Facility Program, the SLA would initiate a modest increase in the Committee's budget that was previously approved for FY 1998 and FY 1999.

The issue of the use of funds for legal expenses budgeted for the Committee was addressed in a letter dated October 1, 1997, from the Chairman of the Committee to the SLA. The Chairman indicated that it was the Committee's understanding that both parties had a consensus concerning the use of funds for legal counsel. The Committee alleged that the SLA never submitted to the Committee in writing any formal objection to the use of the Committee's funds for legal fees. The Committee also alleged that there is no prohibition in the Act and implementing regulations concerning the use of legal counsel by the Committee; therefore, the Committee was entitled to use its funds for legal representation.

The Committee further alleged that a request for a full evidentiary hearing on their complaint concerning the SLA's refusal of payment of legal fees was filed on July 12, 1998, with the SLA. On August 3, 1998, the SLA informed the Committee through the Office of Administrative Hearings that a pre-hearing conference date had been set for October 1, 1998. However, the Committee maintained that the delay in providing a full evidentiary hearing violated the Act, implementing regulations, Maryland State regulations, and the Committee's due process rights to a speedy resolution of its complaint.

The Committee also challenged the selection of the individual to chair the administrative review conference required by State regulations with respect to vendor complaints and challenged the attendance at those informal conferences of the SLA's attorney.

Arbitration Panel Decision

A majority of the arbitration panel concluded that, while the Committee had raised a number of interesting policy issues in support of their claims, there was no requirement in the Act or the implementing Federal or State regulations to fund the activities of the Committee, to grant the Committee plenary control over the expenditures of any monies budgeted to it by the SLA, or to require that the SLA pay for the attorney fees of the Committee, even if those fees were incurred in furtherance of Committee activities mandated by the Act.

The panel further found that the 1974 Amendments to the Act imposed certain responsibilities upon the Committee and increased the participation of licensed blind vendors in the conduct of the Randolph-Sheppard Vending Facility Program. However, the panel ruled that the Act did not grant the Committee any control over the expenditure of program funds (including those program funds that have their source in vendor activities or activities engaged in for the benefit of vendors) and thus did not mandate that the SLA fund any Committee activities in particular.

Concerning the dissatisfaction of the Committee regarding the Administrative Review Conference, the majority of the panel concluded that the selection of the chair and the manner in which the conference was held was consistent with the applicable State regulations.

One panel member dissented.

The views and opinions expressed by the panel do not necessarily represent the views and opinions of the U.S. Department of Education.

Dated: November 16, 2001.

Robert H. Pasternack,

Assistant Secretary, Office Special of Education and Rehabilitative Services.

[FR Doc. 01–29200 Filed 11–21–01; 8:45 am]

BILLING CODE 4000–01–U

DEPARTMENT OF ENERGY

National Energy Technology Laboratory; Notice of Availability of a Financial Assistance Solicitation

AGENCY: National Energy Technology Laboratory (NETL), Morgantown, Department of Energy (DOE).

ACTION: Notice of availability of a Financial Assistance Solicitation.

SUMMARY: NETL announces that, pursuant to 10 CFR 600.8(a)(2), and in support of advanced coal research to U.S. colleges and universities, it intends to conduct a competitive Program Solicitation No. DE–PS26–02NT41369 and award financial assistance grants to qualified recipients. Applications will be subjected to a comparative merit review by a technical panel of DOE subject-matter experts and external peer reviewers. Awards will be made to a limited number of proposers based on: The scientific merit of the proposals, application of relevant program policy factors, and the availability of funds.

Once released, the solicitation will be available for downloading from the IIPS Internet page. At this internet site you will be able to register with IIPS, enabling you to download the solicitation and to submit a proposal. If you need technical assistance in registering or for any other IIPS function call the IIPS Help Desk at (800) 683–0751 or email the Help Desk personnel at *IIPS__HelpDesk@e-center.doe.gov.* Questions relating to the solicitation content must be submitted electronically to the Contract Specialist via email. All responses to questions will be released on the IIPS home page as will all amendments. The solicitation will only be available in IIPS.

DATES: The solicitation will be available for downloading on the DOE/NETL's Homepage at *http://www.netl.doe.gov/business* and the IIPS ''Industry Interactive Procurement System'' Internet page located at *http://e-center.doe.gov* on or about December 3, 2001. Applications must be prepared and submitted in accordance with the instructions in the Program Solicitation and must be received at NETL by January 16, 2002. Prior to submitting your application to the solicitation, periodically check the NETL Website for any amendments.

FOR FURTHER SOLICITATION INFORMATION CONTACT: Michael P. Nolan, U.S. Department of Energy, National Energy Technology Laboratory, P.O. Box 880 (MS I07), Morgantown, WV 26507–0880; Telephone: 304/285–4149; Facsimile: 304/285–4683; E-mail: *mnolan@netl.doe.gov.*

SUPPLEMENTARY INFORMATION: Through Program Solicitation DE–PS26–02NT41369, the DOE is interested in applications from U.S. colleges and universities, and university-affiliated research centers submitting applications through their respective universities. Applications will be selected to complement and enhance research being conducted in related Fossil Energy programs. Applications may be submitted individually (*i.e.,* by only one college/university or one college subcontracting with one other college/university) or jointly (*i.e.,* by ''teams'' made up of (1) three or more colleges/universities, or (2) two or more colleges/universities and at least one industrial partner. Collaboration, in the form of joint proposals, is *encouraged* but not required.

Eligibility

Applications submitted in response to this solicitation must address coal research in one of the key focus areas of the Core Program or as outlined in the Innovative Concepts Phase-I & Phase-II Programs.

Background

The current landscape of the U.S. energy industry, not unlike that in other parts of the world, is undergoing a transformation driven by changes such as deregulation of power generation, more stringent environmental standards and regulations, climate change concerns, and other market forces. With these changes come new players and a refocusing of existing players in providing energy services and products. The traditional settings of how energy (both electricity and fuel) is generated, transported, and utilized are likely to be very different in the coming decades. As market, policy, and regulatory forces evolve and shape the energy industry both domestically and globally, the opportunity exists for universities, government, and industry partnerships to invest in advanced fossil energy technologies that can return public and economic benefits many times over. These benefits are achievable through the development of advanced coal technologies for the marketplace.

Energy from coal-fired powerplants will continue to play a dominant role as an energy source, and therefore, it is prudent to use this resource wisely and ensure that it remains part of the sustainable energy solution. In that regard, our focus is on a concept we call Vision 21. Vision 21 is a pathway to clean, affordable energy achieved through a combination of technology evolution and innovation aimed at creating the most advanced fleet of flexible, clean and efficient power and energy plants for the 21st century. Clean, efficient, competitively priced coal-derived products, and low-cost environmental compliance and energy systems remain key to our continuing prosperity and our commitment to tackle environmental challenges, including climate change. It is envisioned that these Vision 21 plants can competitively produce low-cost electricity at efficiencies higher than 60% with coal. This class of facilities will involve ''near-zero discharge'' energy plants—virtually no emissions will escape into the environment. Sulfur dioxide and nitrogen oxide pollutants would be removed and converted into environmentally benign substances, perhaps fertilizers or other commercial products. Carbon dioxide could be (1) concentrated and either recycled or disposed of in a geologically permanent manner, or (2) converted into industrially useful products, or (3) by creating offsetting natural sinks for CO_2.

Clean coal-fired powerplants remain the major source of electricity for the world while distributed generation, including renewables, will assume a growing share of the energy market. Technological advances finding their way into future markets could result in advanced co-production and co-processing facilities around the world, based upon Vision 21 technologies developed through universities, government, and industry partnerships.

This Vision 21 concept, in many ways is the culmination of decades of power and fuels research and development. Within the Vision 21 plants, the full energy potential of fossil fuel feedstocks and ''opportunity'' feedstocks such as biomass, petroleum coke, and other materials that might otherwise be considered as wastes, can be tapped by integrating advanced technology ''modules.'' These technology modules include fuel-flexible coal gasifiers and combustors, gas for fuels and chemical synthesis. Each Vision 21 plant can be built in the configuration best suited for its market application by combining technology modules. Designers of Vision 21 plant would tailor the plant to use the desired feedstocks and produce the desired products by selecting and integrating the appropriate ''technology modules.''

The goal of Vision 21 is to effectively eliminate, at competitive costs, environmental concerns associated with the use of fossil fuel for producing electricity and transportation fuels. Vision 21 is based on three premises: that we will need to rely on fossil fuels for a major share of our electricity and transportation fuel needs well into the 21st century; that it makes sense to rely on a diverse mix of energy resources, including coal, gas, oil, biomass and other renewables, nuclear, and so-called ''opportunity'' resources, rather than on a reduced subset of these resources; and that R&D directed at resolving our energy and environmental issues can find affordable ways to make energy conversion systems meet even stricter environmental standards.

To accomplish the program objective, applications will be accepted in three program areas: (1) The Core Program, (2) the Innovative Concepts Phase-I Program, and (3) the Innovative Concepts Phase-II Program.

University Coal Research (UCR) Core Program Focus Areas

To develop and sustain a national program of university research in fundamental coal studies, the DOE is interested in innovative and fundamental research pertinent to coal conversion and utilization. The maximum DOE funding for each individual college/university award under the University Coal Research Core Program is:

12 month project period	$80,000 (max. DOE funds)
13–24 month project period	$140,000 (max. DOE funds)
25–60 month project period	$200,000 (max. DOE funds)

For Joint Universities and Joint University/Industry awards, the maximum DOE funding is $400,000 for a 36-month performance period. Joint University/Industry applications must specify a minimum of twenty-five percent (25%) cost sharing of the total proposed project cost.

The DOE anticipates funding at least one proposal in each focus area under the UCR Core Program; however, high-quality proposals in a higher ranked

focus area may be given more consideration during the selection process. Research in this area is *limited* to the following six (6) focus areas and is listed numerically in descending order of programmatic priority.

Core Program Focus Areas

1.0 Novel Sensors and Control Systems

Novel sensors and control systems that support the full-scale implementation and operations of highly efficient power generation technologies are of interest, these systems include: advanced combustion, gasification, turbines, and fuel cells, as well as gas cleaning technologies, carbon sequestration, and advanced emissions control technologies. Current technology developments are supported by the Vision 21 program and other programmatic efforts aimed at enhancing the efficiency and reducing emissions, thereby removing the environmental concerns associated with fossil fuel use. To facilitate this effort, several ''smart'' sensors and advanced control algorithms are needed to operate these complex, integrated technologies in a safe and reliable manner.

Grant applications for novel sensor techniques are sought that can operate reliably and accurately in the presence of high temperature (e.g., 1000 °C or higher), elevated pressure (*e.g.*, 100–1000 psig), abrasive streams (*e.g.*, high particulate flue gas) and corrosive atmospheres (*e.g.*, oxidizing and reducing conditions). Robust sensors for in-situ monitoring of fine particulates (*e.g.*, 0–10 microns), environmental contaminants (*e.g.*, NO_X), and gases (*e.g.*, hydrogen, NH_3) are needed. Novel approaches to on-line characterization of solid fuel (*e.g.*, coal, biomass) are needed to measure parameters such as: feed rates; heating value; percent water content; ash; sulfur, nitrogen concentrations; and trace elemental contaminants. Robust temperature-sensing techniques and instrumentation are needed for use in coal gasifiers (up to 2600 °C in reducing atmospheres) and gas turbines (up to 4000 °C in oxidizing atmospheres).

In addition to sensors that monitor the operation of advanced and existing power generation technologies, grant applications are sought for instrumentation and sensors to monitor a system's ''health'' status on-line. Techniques are needed to monitor and predict maintenance of critical equipment. Examples of system health monitoring needs include techniques to indicate or measure (1) refractory wear in coal gasfiers, (2) thermal barrier coating degradation in natural gas turbines, and (3) water-wall wastage associated with low- NO_X burner technology.

2.0 Materials and Components for Vision 21 Systems

Gas turbines and membrane reactors are among the enabling technologies that support the Vision 21 concept. Membrane reactor development represents a critical enabling technology for future Vision 21 Systems. Of particular interest are materials needs and property changes to accommodate coal and bio-mass fuels.

Membrane reactors based on microporous and mesoporous ceramic membranes provide a broad array of opportunities regarding the choice materials for membranes, their catalytic properties and possible applications. The most widely used application involves equilibrium displacement by removal of at least one reaction product. Most often, the removal of hydrogen in dehydrogenation or water gas shift reactions has been the process of choice.

Porous ceramic membranes can be made, in whole or in part, of alumina, silica, titania, zirconia, zeolites, etc., materials which are catalytically active under suitable operating conditions. During preparation procedure one can give specific properties to the catalyst; *e.g.*, successive layers of different materials can be deposited across the membrane radius which would allow one to carry out different consecutive reactions in different regions of the membrane.

The prospects of using dense membranes based on mixed ionic/electronic conducting ceramics for syngas production in a catalytic membrane reactor are constrained by problems related to limited thermodynamic stability and poor dimensional stability of candidate materials. New compositions of oxygen transport membrane materials within or outside of Perovskitic (ABO_3) and Brownmillerite ($A_2B_2O_5$) structures for separation of oxygen via oxygen anion and electron conduction should be investigated to address the issues. Proton conducting ceramics are also of interest.

In the area of materials for fuel-flexible combustion turbines, an implication of high efficiency is that materials with very high temperature capabilities will be necessary. Practical application of metals and coatings, as structural materials at the ultrahigh temperatures (well above 1000°C) required is a formidable challenge. Among the topics of interest are the following:

Grant applications are sought for proposals to develop catalytic membrane reactors to circumvent thermodynamic equilibrium limitations and derive useful products such as hydrogen from reactants obtained from coal conversion or gasification. Novel membrane materials and reactor configurations as well as new applications to different reaction systems are desired.

Research leading to optimization of single crystal alloys for gas turbine airfoils and modifications that will better tailor the alloy properties to the duty cycle requirements and processing constraints of advanced land-based gas turbines, while building on the technology embodied in current superalloys. Such a modified alloy would have the combination of very long-term mechanical properties and environmental resistance required for advanced gas turbine conditions.

Advanced thermal barrier coatings (TBCs) that have superior durability and performance in an industrial gas turbine environment. Desirable characteristics include TBC compositions resistant to corrosive attack by deposits derived from combustion of low-grade fuel, syngas, and air impurities, and/or sealed gas path surfaces to inhibit deposits from penetrating into the TBCs porous (strain tolerant) microstructure, as well as lower thermal conductivity. Also, develop methods to identify and avoid combustion environments that result in unacceptable TBC life. The research should include modeling and prediction of the rate of fuel ash deposition onto turbine airfoils and the corrosiveness of ash deposits to YSZ and other TBC candidates.

3.0 Computational Approaches to Advanced Catalyst Design

Improvements in catalysts are needed to reduce the cost of producing transportation fuels suitable for use under forthcoming stricter environmental regulations and to broaden the base of feedstocks available for their production. Two examples of particular concern of this solicitation are Fischer Tropsch synthesis and catalytic reforming. The Fischer Tropsch synthesis produces a paraffinic wax that may then be cracked to produce a sulfur-free, aromatic-free, and high cetane diesel fuel. This fuel is a desirable blending stock that can be used to bring diesel fuels within the more strict future regulations on sulfur and aromatics content. A major draw back to the Fischer Tropsch synthesis is that the lack of selectivity of the current catalysts results in a wide distribution of molecular weight in the product slate.

Expensive post-synthesis processing is then required that drives up the price of the desired diesel fuel. An ideal Fischer Tropsch synthesis would produce a narrow distillate cut that falls within the diesel range with little production of unwanted byproduct. Catalytic reforming of natural gas is the first step in converting this under-utilized natural resource to liquid fuels. In this case, a major problem lies in the tendency of the catalyst to form carbonaceous deposits that either reduces its lifetime or places restrictions on process operating parameters. The ever-increasing power of the methods and hardware now being applied in computational chemistry needs to be enlisted to help develop better catalysts for both of these processes. Of most value are studies that provide guidance in the means to improve catalyst design through choice of metals, alloys, promoters, supports, size of the active particles, etc.

To provide the fundamental knowledge required to effectively accelerate these efforts in catalyst development, grant applications are sought for the application of computational methods to generate a molecular understanding of the kinetics of competitive reactions on catalytic surfaces. Successful applications will attack the most critical problems in catalyst performance. Applications must show evidence of the intent to develop means to improve catalyst performance through strategies such as: the suppression of the relative rates of surface reactions leading to deactivation, suppression of the production of unwanted co-products, or enhancement of the control of selectivity towards production of desirable products. Grant applications must specifically address either of two problems: determination of the molecular principles that govern the relative rates of chain growth versus chain termination ($\propto\leq$) on iron or cobalt Fischer Tropsch catalysts, or determination of the molecular factors that govern the relative rates of coke formation versus methane reforming on nickel catalysts. The proposals must be conceived at the fundamental molecular level. Applications based on reactor or process modeling will not be considered.

4.0 Materials for Intermediate Temperature Solid-Oxide Fuel Cells

Solid-oxide fuel cells (SOFCs) offer significant advantages in the conversion of fossil fuels to electrical power. Without an intermediate heat production step the efficiency of an SOFC can be much higher than current methods of producing power. Currently, SOFC configurations and applications are restricted by the high-temperatures needed to maintain adequate area specific resistanceses while ensuring long-term reliability. The only material set (yttria stabilized zirconia, lanthanum strontium manganite, and nickel/zirconia cermet) that has been successfully demonstrated over a substantial period of time has a lower temperature limit of about 800 °C and possibly 750°C with some modifications.

Grant applications are being sought for identification and characterization of one or more (considering the time and financial constraints) SOFC anode, electrolyte, cathode material set(s) that can operate in the 500°C to 700°C range. The structure(s) should be manufacturable with relatively inexpensive manufacturing techniques. The material cost should be roughly no more than the previously referenced material set or less. (Electrolyte transference numbers should be known or shown to be adequate in a typical SOFC environment before proceeding). The characterization should demonstrate as much as possible that the complete structure can meet the requirements of an SOFC fuel cell with a projected power density of (0.6W/cm^2 at 0.7 V, corrected for test cell resistance) in the indicated temperature range and subject to the typical fuel and oxidant environments. Characterization should include chemical stability between the components. The lifetime effects (phase stability, thermal expansion compatibility, conductivity aging, and electrode sintering) should be considered and characterized as much as possible. The characterization of the material set should in general be, as complete as possible and, not duplicate publicly known information. The proposal should address all aspects of the stated topic.

5.0 Novel Concepts for Reducing Water Used in Power Generation

Power generated from fossil fuels, especially coal, is dependent on water. On average, approximately 30 gallons of water are required for each kWh of power produced from coal. Around 70 trillion gallons of water are consumed or impacted annually in the United States to produce energy. The large quantity of water to produce power has regulatory and technological issues related to both the amount of water used and the potential impact on water quality. The largest single use of water in power generation is for cooling the low-pressure steam from the turbine. An alternative to the use of water for cooling is air. However, air-cooled systems (sometimes referred to as dry systems) can have associated capital-cost and energy-inefficiency penalties, particularly in retrofit applications.

Grant applications are sought to reduce or eliminate the need for water for cooling purposed including: (1) Novel heat-transfer media that is more efficient than air; (2) improved fill materials used in re-circulating (closed loop) wet cooling towers; (3) approaches to reducing evaporative loss from closed wet systems; (4) innovations to improve the efficiency of dry cooling systems, particularly for retrofit applications; and (5) novel, lowcost treatment technology to allow for the use of process water as boiler feed water.

6.0 Conversion of Coal-Derived Synthesis Gas to Fischer-Tropsch (F–T) Liquids

The conversion of coal to Fischer-Tropsch liquids can help supplement petroleum in satisfying our Nation's growing demand for clean transportation fuels, but additional scientific understanding of the entire process is needed to enable technology developers to improve system performance and economics. Historically, empirically-derived laboratory data has been used to develop Fischer-Tropsch reactor systems and to determine operating conditions. Catalysis has played a significant role in helping to establish a reasonable range of operation conditions that provide less residence time, higher product yield and selectivity, and lower energy consumption. However, neither the exact reaction mechanisms nor individual kinetic expressions are known for advanced, iron-based catalysts that are currently being developed for three-phase slurry reactor systems.

Grant applications are requested for projects that focus on deriving mechanistic and kinetic expressions for converting coal-derived synthesis gas to F–T liquids via iron-based catalysts in a three-phase regime that may include a range of reactants and operating parameters that would be reasonable for a commercial F–T system. Proposals may include the use of commercial F–T catalysts as a baseline for comparative evaluations.

UCR Innovative Concepts Phase–I Program

The goal of solicited research under the Innovative Concepts (IC) Phase–I Program is to develop unique approaches for addressing fossil energy-related issues. These approaches should represent significant departures from

existing approaches, not simply incremental improvements. The IC Phase–I Program seeks ''out-of-the-box'' thinking; therefore, well-developed ideas, past the conceptual stage, are not eligible for the Phase–I Program. Applications are invited from individual college/university researchers. Joint applications (as described under the Core Program) will also be accepted, although no additional funds are made available for joint versus individual applications. Unlike the Core Program, student participation in the IC Phase–I proposed research is strongly encouraged, however, not required. Funding for Phase–I grants will be limited to a total of $50K over a 12-month period.

In the twenty-first century, the challenges facing coal and the electric utility industry continue to grow. Environmental issues such as pollutant control, both criteria and trace pollutants, waste minimization, and the co-firing of coal with biomass, waste, or alternative fuels will remain important. The need for increased efficiency, improved reliability, and lower costs will be felt as an aging utility industry faces deregulation. Advanced power systems, such as a Vision 21 plant, and environmental systems will come into play as older plants are retired and utilities explore new ways to meet the growing demand for electricity.

Innovative research in the coal conversion and utilization areas will be required if coal is to continue to play a dominant role in the generation of electric power. Technical topics like the ones identified below are potential examples of research areas of interest, however, the areas identified were not intended to be all-encompassing. Therefore, it is specifically emphasized that other subjects for coal research would receive the same evaluation and consideration for support as the examples cited.

Innovative Concepts Phase–I Technical Topics

Smart Sensing and Advanced Artificially Intelligent Control Systems

The development of innovative concepts and techniques for smart sensing and advanced artificially intelligent control systems are needed to foster concurrent development efforts with advanced power generations technologies such as fuel cells, turbines, and gasification. Similar systems are also needed to deal with increasingly stringent emissions requirements (SO^2 and NO_X) for existing coal-fired power plants. The goal for new sensors and controls technology is to develop low cost, reliable, and accurate systems that permit real time monitoring and optimization of complex systems. For DOE's Vision 21 program, these advanced systems will support the production of power, chemicals, fuels, and/or steam with the highest efficiencies possible and near-zero emissions. The primary barriers for existing technologies are the harsh conditions that sensors may be exposed to combined with the need for extreme accuracy and fast response times. Incremental improvements of existing sensor and control technologies are not desired but rather revolutionary ideas that have the sound scientific basis to support significant advancements in this technology area.

Fundamental Study of Reaction Mechanism of Magnesium Silicates with Carbonic Acid and Other Solutions

The carbonation of naturally occurring magnesium silicates has shown promise as a method of achieving long-term carbon sequestration. It has been demonstrated that magnesium silicates such as serpentine and olivine can be reacted with CO2 to produce a highly stable solid magnesium carbonate material. This process is based upon the dissolution of the magnesium silicates in an aqueous carbonic acid solution containing chemical additives such as NaCl. The critical rate-limiting step in the carbonation process is currently believed to be the release or dissolution of the magnesium from the silicate into the solution.

Faster and less energy intensive pathways must be identified in order to develop an economically viable process based on mineral carbonation. By gaining a better understanding of the fundamental reaction mechanisms, new approaches could be devised that offered faster and more economical carbonation routes. Consequently, gaining a better understanding of this process is of interest to the USDOE. Skilled investigators having the capability to conduct well-planned experimental and theoretical investigations that can elucidate the detailed reaction path, quantify reaction barriers, and develop strategies to increase carbonation reaction rates are encouraged to apply.

Nitrogen/Carbon Dioxide Separation

Since the primary source of greenhouse gas emissions, primarily carbon dioxide, is combustion of fossil fuels such as coal or natural gas, options to reduce carbon dioxide emissions are being examined. In particular, inorganic membranes based on metals, ceramics or zeolites are suitable for the separation of such gases because they can sustain severe conditions such as high pressure, chemical corrosion, and high temperature. Approaches are needed whereby the membrane can be tailored to separate carbon dioxide from the nitrogen, the latter being the predominant component in the flue gas of a fossil fuel fired power plant. For example, the separation could be caused by dopants in the inorganic membrane that prefer to bond with carbon dioxide and facilitate its surface diffusion along the pore wall. Proposals are invited wherein factors such as concentration of dopant and pore diameter will be investigated, along with molecular simulations, in order to maximize the separation factor.

Heterogeneous Reburning

Recently, reburning with coal and coal-derived chars have been demonstrated to be an effective route for the reduction of nitrogen oxide emissions in boilers. Research is necessary to identify concepts for further reductions of nitrogen oxides and other detrimental emissions, such as carbon monoxide, through heterogeneous reburning.

One example of such research is research to develop in-furnace combustion NO_X reduction technologies that would reduce NO_X emissions below 0.15 lb/MMBtu or be utilized in conjunction with other low cost NO_X reduction technologies such as SNCR to achieve this objective while significantly reducing the overall cost of compliance when compared to SCR.

UCR Innovative Concepts Phase–II Program

The goal of the Phase–II Program, the principal R&D effort of the IC Program, is to solicit research that augments research previously funded through the Phase–I Program. Funding for Phase–II grants will be limited to a total of $200K over a 3-year period and student participation will be required. Only institutions receiving a Phase–I grant awarded in fiscal years 2000 and 2001 will be eligible to submit an application for continuation of their Phase–I projects. It's anticipated that at least 2–3 institutions submitting an application with approaches that appear sufficiently promising from the Phase–I efforts could receive a Phase–II award in 2002.

Issued in Morgantown, WV on November 9, 2001.

Randolph L. Kesling, Director,

Acquisition and Assistance Division.

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