| Tuesday         | Session E - Conference Room: Bob Hope   |                   |  |                        |  |  |  |  |
|-----------------|---|-------------------|--|------------------------|--|--|--|--|
| Tuesday<br>4/21 | GASIFICATION SYSTEMS  |                   |  |                        |  |  |  |  |
|                 | Organization  | PI                | Title  | Moderator              |  |  |  |  |
| 7:00 AM         | REGISTRATION AND BREAKFAST  |                   |  |                        |  |  |  |  |
| 7:30 AM         |   |                   |  |                        |  |  |  |  |
| 0.00.444        | KEYNOTES  Welcome: Brian Anderson, Director, National Energy Technology Laboratory  |                   |  |                        |  |  |  |  |
| 8:00 AM         | Welcome: Brian Anderson, Director, National Energy Technology Laboratory  Keynote: Steven Winberg, Assistant Secretary for Fossil Energy, U.S. Department of Energy |                   |  |                        |  |  |  |  |
| 9:00 AM         | Panel: Fossil Energy Program Update   |                   |  |                        |  |  |  |  |
| 9:30 AM         | Update: Historically Black Colleges and Universities (TBD)  |                   |  |                        |  |  |  |  |
| 10:00 AM        | Success Story: Tech4Imaging, Doing Business with NETL/DOE  BREAK  |                   |  |                        |  |  |  |  |
|                 | Gasification with Mixed Feedstocks & Flexible Operations  |                   |  |                        |  |  |  |  |
| 10:30 AM        | Oak Ridge National<br>Laboratory  | James Parks II    | Experimental Validation of Coal Gasification with Neutron Imaging  | Diane Revay<br>Madden  |  |  |  |  |
| 11:00 AM        | National Energy<br>Technology Laboratory<br>RI&C  | Mehrdad Shahnam   | Advanced Gasifier Design   |                        |  |  |  |  |
| 11:30 AM        | University of Alaska -<br>Fairbanks   | Brent Sheets      | Making Coal Relevant for Small Scale Applications: Modular Gasification for Syngas/Engine CHP Applications in Challenging Environments                 |                        |  |  |  |  |
| NOON            | LUNCH   |                   |  |                        |  |  |  |  |
|                 | Air Separation Technologies to Assist Modular Gasification I  |                   |  |                        |  |  |  |  |
| 1:00 PM         | Pacific Northwest<br>National Laboratory  | David Reed        | Pressure Driven Oxygen Separation  | Venkat<br>Venkataraman |  |  |  |  |
| 1:30 PM         | National Energy<br>Technology Laboratory<br>RI&C  | Jonathan Lekse    | Oxygen Production for Gasification   |                        |  |  |  |  |
| 2:00 PM         | Research Triangle<br>Institute  | John Carpenter    | Pilot Testing of a Modular Oxygen Production System Using<br>Oxygen Binding Adsorbents   |                        |  |  |  |  |
| 2:30 PM         | Pacific Northwest<br>National Laboratory  | Jamie Holladay    | Magnetocaloric Cryogenic System for High Efficiency Air<br>Separations.  |                        |  |  |  |  |
| 3:00 PM         | BREAK   |                   |  |                        |  |  |  |  |
|                 | Air Separation Technologies to Assist Modular Gasification II   |                   |  |                        |  |  |  |  |
| 3:30 PM         | Idaho National<br>Laboratory  | Frederick Stewart | Advanced Oxygen Separation from Air Using a Novel Mixed<br>Matrix Membrane   | Venkat<br>Venkataraman |  |  |  |  |
| 4:00 PM         | Los Alamos National<br>Laboratory   | Rajinder P. Singh | High Selectivity and High Throughput Carbon Molecular<br>Sieve Hollow Fiber Membrane based Modular Air<br>Separation Unit for Producing High Purity O2 |                        |  |  |  |  |
| 4:30 PM         | North Carolina State<br>University  | Fanxing Li        | Radically Engineered Modular Air Separation System Using<br>Tailored Oxygen Sorbents   |                        |  |  |  |  |
| 5:00 - 7:30 PM  | POSTER SESSION  |                   |  |                        |  |  |  |  |
|                 |   |                   |  | 2/6/2020 10:02         |  |  |  |  |

| 9:00 AM P P P P P P P P P P P P P P P P P P                     | Organization  TDA Research, Inc.  University of Kentucky Research Foundation  National Energy              | PI REGI Enabling Technolo Gokhan Alptekin | SIFICATION SYSTEMS  Title  STRATION AND BREAKFAST  ogies for Affordable Small Scale Gasifiers  Integrated Water-Gas-Shift (WGS) / Pre-Combustion | Moderator           |  |  |
|---|--|---|--|---------------------|--|--|
| 7:30 AM  8:00 AM  7:30 AM  8:30 AM  9:00 AM  10:00 AM  10:30 AM | TDA Research, Inc. University of Kentucky Research Foundation  | REGI Enabling Technolo Gokhan Alptekin    | STRATION AND BREAKFAST  ogies for Affordable Small Scale Gasifiers   | Moderator           |  |  |
| 7:30 AM  8:00 AM  7:30 AM  8:30 AM  9:00 AM  10:00 AM  10:30 AM | TDA Research, Inc. University of Kentucky Research Foundation  | Enabling Technolo  Gokhan Alptekin        | ogies for Affordable Small Scale Gasifiers   |                     |  |  |
| 8:00 AM T   | TDA Research, Inc. University of Kentucky Research Foundation  | Enabling Technolo  Gokhan Alptekin        | ogies for Affordable Small Scale Gasifiers   |                     |  |  |
| 8:30 AM   | TDA Research, Inc. University of Kentucky Research Foundation  | Gokhan Alptekin                           |  |                     |  |  |
| 8:30 AM   | University of Kentucky<br>Research Foundation  | ·   | Integrated Water-Gas-Shift (WGS) / Pre-Combustion  |                     |  |  |
| 9:00 AM T T T T T T T T T T T T T T T T T T                     | Research Foundation  |   | Carbon Capture Process   | Steven<br>Markovich |  |  |
| 9:30 AM File 10:00 AM TO:30 AM TO:30 AM                         | National Energy  | Landon Caudill                            | Staged Opposed Multi Burner (OMB) for Modular<br>Gasifier/Burner   |                     |  |  |
| 10:00 AM  10:30 AM  N   | Technology Laboratory  | Mark Smith                                | Microwave Reactions for Gasification   |                     |  |  |
| 10:30 AM  | Research Triangle<br>Institute   | Atish Kataria                             | Advance Syngas Cleanup for Radically Engineered Modular Systems (REMS)   |                     |  |  |
| 10:30 AM  | BREAK  |   |  |                     |  |  |
| 10:30 AM  | G  | Gasification with N                       | Mixed Feedstocks & Flexible Operations II  |                     |  |  |
|   | National Energy<br>Technology Laboratory   | Jinichiro Nakano                          | Advanced Manufacturing Technologies for Gasification   | Steven<br>Markovich |  |  |
| 11:00 AM  | Southern Research<br>Institute   | Mikhail Granovskiy                        | Small-Scale Engineered High Flexibility Gasifier   |                     |  |  |
| 11:30 AM  | Mainstream Engineering<br>Corporation  | Nicholas Schwartz                         | Conversion of Coal Wastes and Municipal Solids Mixtures by Pyrolysis Torrefaction and Entrained Flow Gasification                                |                     |  |  |
| NOON  |  |   | LUNCH  |                     |  |  |
| 12:30 PM  |  |   |  |                     |  |  |
|   |  |   | aches for 21st Century Needs Workshop I  |                     |  |  |
| 1:00 PM   | Panel Presentations - Workshop Goals - David Lyons - Process Intensification for Syngas and Hydrogen (TBD) |   |  |                     |  |  |
| 1:30 PM   | - Air Separation Technology (TBD) - Coal-Biomass to Liquids and Negative CO2 (Raghubir Gupta)              |   |  |                     |  |  |
| 2:00 PM   | Breakout Sessions  |   |  |                     |  |  |
| 2:30 PM   |  |   |  |                     |  |  |
| 3:00 PM   | BREAK  |   |  |                     |  |  |
|   | G  | asification Approa                        | aches for 21st Century Needs Workshop II   |                     |  |  |
| 3:30 PM   | Report out by Session Leads  |   |  |                     |  |  |
| 4:00 PM   | David Lyons  |   | Final remarks  |                     |  |  |
| 4:30 PM   |  |   |  |                     |  |  |

## **POSTER SESSION**

| Program              | Number | Organization                             | PI                   | Title  | Agreement # |
|----------------------|--------|--|----------------------|--|-------------|
| GASIFICATION SYSTEMS | GAS-1  | University of South Carolina             | Xingjian (Chris) Xue | Modularization of Ceramic Hollow Fiber Membrane<br>Technology for Air Separation | FE0031473   |
|                      | GAS-2  | TDA Research, Inc.                       | Gokhan Alptekin      | Warm Gas Multi-Contaminant Removal System  | SC0008243   |
|                      | GAS-3  | National Energy Technology<br>Laboratory | Justin Weber         | Flexible Modular Vortex Gasifier for Deployable Power                            | ARS FWP     |