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Chunshan Song Elected to the 2010 Class of ACS Fellows

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Chunshan Song, distinguished professor of fuel science in the Department of Energy and Mineral Engineering and director of EMS Energy Institute at Pennsylvania State University, has been elected to the 2010 class of Fellows of the American Chemical Society (ACS).

The ACS Fellows Program was created in 2008 to "recognize members for their contributions to the chemical sciences and outstanding service to ACS." Last year, ACS honored the inaugural class of 162 Fellows. The 2010 Fellows, including Song, will be honored at a special ceremony during the ACS National Meeting in Boston, MA this August.

Song was recently named a Distinguished Professor of Fuel Science by Penn State's Office of the President. He is also professor of chemical engineering and associate director of the Penn State Institutes of Energy and the Environment.

Song is internationally recognized for his original and innovative contributions to clean fuels, catalysis and CO_2 capture and conversion research. His early research at Penn State on catalytic coal liquefaction and the effects of drying on coal conversion at low temperatures led to a new method for preparing highly active dispersed catalysts using a water and sulfide precursor. Based on this discovery, further fundamental studies using probe molecules resulted in two patents licensed to industry for inventions related to nano-sized ultra-high-surface metal sulfide catalysts. From his efforts to make better use of coal-derived aromatics for value-added chemicals, he designed shape-selective alkylation catalysts for synthesis of precursors for advanced polymers and engineering materials from naphthalene, which have also been patented

and licensed to industry. He has made major contributions to the development of coal-based advanced thermally stable jet fuels through his work on fundamental chemistry concerning the effects of intrinsic fuel composition and structure on thermal degradation of jet fuels, and his work on model compounds studies related to stable bicyclic structures and hydroaromatics and their tailored production through catalysis. For ultra-clean fuels and fuel cells, Song and his group devised an innovative approach to selective adsorption for removing sulfur from liquid hydrocarbon fuels over solid surface without using hydrogen. This approach has been licensed to industry as well and is already used for making prototype systems.

Song's group recently developed a novel approach to CO_2 capture by "molecular-basket sorbents" consisting of nanoporous matrix and functional polymers with superior capacity and selectivity. In addition, his group developed sulfur-tolerant and carbon-resistant bimetallic and trimetallic catalysts for low-temperature steam reforming of liquid fuels and non-pyrophoric catalysts for oxygen-assisted water gas shift. He recently proposed a new design concept of sulfur-tolerant noble metal catalysts for low-temperature hydrotreating and dearomatization for ultra clean fuels.

Song is an active leader in hydrocarbon processing research and has been elected as Chair of the Fuel Chemistry and the Petroleum Chemistry Divisions of ACS as well as Chair of the Advisory Board for the International Pittsburgh Coal Conference. He has also served as chair or co-chair for over 35 international symposia, and is currently on eight research journal advisory boards. In addition, he serves on the scientific advisory boards for several international conference series and for several R&D organizations worldwide.

A prolific author of many high-impact publications, Song has delivered 40 plenary or keynote lectures at international conferences and 190 invited lectures worldwide. He has 170 refereed journal articles (which received over 4000 citations), 6 refereed books, 25 book chapters, 11 special journal issues, 20 patents and patent applications, and over 280 conference papers. He has also received a number of major awards, including the Fulbright Distinguished Scholar from US-UK; the Herman Pines Award for Outstanding Research in Catalysis from Catalysis Club of Chicago in North American Catalysis Society; the Chang Jiang Scholar from the Ministry of Education of China; Most Cited Authors in Catalysis from Elsevier; Outstanding Scholar Overseas from the Chinese Academy of Sciences; the Distinguished Catalysis Researcher Lectureship from Pacific Northwest National Laboratory; the Robinson Distinguished Lectureship from University of Alberta, Canada; the NEDO Fellowship and AIST Fellowship Awards from Japan; Distinguished Service Awards from the ACS Petroleum Chemistry Division, and from the Annual International Pittsburgh Coal Conference; and the Henry H. Storch Award from ACS. Within the Pennsylvania State University, he has received the Wilson Award for Excellence in Research, the Faculty Mentoring Award, Inventor Incentive Awards and the Materials Science & Engineering Service Award.

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