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Processing of heavy oils and oil sands

One of the most important achievements of recent years is the creation of the technology for extraction of "heavy" oil from oil sands (OS) that is intensively developing in Canada. Huge deposits of OS of Republic of Kazakhstan which are characterized by content of organic part that ranges from 9 to 95% according to type and depth of each deposit are a prime candidate as an alternative source of hydrocarbons. It is notable that we can obtain organic products with various physical and chemical properties depending on the method of processing of OS. In connection with the above, in the Laboratory of Oxidation Processes of hydrocarbon of Institute of Combustion Problems (ICP) the development of following main directions of processing of OS in order to produce commercial oil products is carried:

- Extraction of organic part of OS of Kazakhstan deposits using different organic solvents with subsequent oxidizing it to bitumen, that is used for road construction;
- Thermal processing of OS of Kazakhstan deposits with obtaining of synthetic oils as well as hydrophobic mineral part;
- Ultrasonic method for separation of organic and mineral parts of OS using solutions of alkaline metals, serving as surfactants;

Along with development of methods of OS processing a great attention is paid to improve the physical & chemical characteristics of road bitumen by creation of its composite with rubber crumb, as well as a problem of recycling of rubber pollutants and wastes is solved. An important aspect of ICP research is ecology of oil and gas industry. Study is carried out as research in area of bio-remediation of oil-contaminated soils using bacteria.

Biography

Z A Mansurov is a General Director of the Institute of Combustion Problems of the Ministry of Education and Science of the Republic of Kazakhstan, prominent scientist of Kazakhstan; Doctor of Chemistry; Professor; IHEAS Academician; Laureate of the State Prize of the Republic of Kazakhstan and of the Prize named after K. Satpayev. In 1974-1987, he worked as a junior and senior researcher and Head of the Laboratory of Physicochemical Methods of Research at S.M. Kirov Kazakh State University. In 1981, he was the first among scientists in Kazakhstan to become a research fellow at the UCL (UK). In 1990, he defended his Doctoral thesis at the Institute of Structural Macrokinetics, USSR AS. From 1992 to 2010, he served as Vice President for Research and First Vice-rector of the al-Farabi Kaz NU. He is a Chairman of Combustion and Plasma Chemistry and Physics and Chemistry of Carbon Materials International Symposiums, Chief Editor of *Eurasian Chemico-Technological Journal* and *Combustion and Plasma Chemistry* journals. In 2004, for services to Kazakhstan he was awarded Kurmet Order. Under his peer supervision, eight Doctors, 38 Masters and eight PhD theses were defended. He is the author of over 670 scientific papers, 6 monographs, 5 textbooks and 21 copyright certificates of the USSR and Kazakhstani patents.

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