



CFRI NEWSLETTER



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Established in November 1946, Central Fuel Research Institute is a unique Institute of its kind in India under CSIR, New Delhi to conduct research in different areas of Fuel Science and Technology with emphasis on coal and lignite.

Mission: Enhance the position of the Institute as a premier R&D centre for technology development and transfer by forging strategic alliance with other agencies and continuously strive for excellence in the area of potential expertise for generation of basic knowledge, innovation, and advanced concepts in science and technology for economic, efficient, and environmentally safe energy management.

PREPARATION OF COAL AND SLURRY SAMPLES AND BENEFICIATION ON TISCO WEST BOKARO COALS (TATA R&D, Jamshedpur)

The main objective of the project is to study cleaning potentiality of West Bokaro Coals by different physical and physico-chemical processes aiming at 10% clean coal ash level. The coarse coal washing pilot plant (CCWPP) and Fine Coal Treatment Pilot Plant (FCTPP) were used extensively for crushing the ROM coal to various sizes viz. 13mm, 10mm, 6mm, 3mm for liberation studies at TATA R&D Centre, Jamshedpur. For conducting large scale studies on the coal fines, about 15 tonne of ROM coal was crushed to 10mm and deslimed at 0.5mm. The slurry was despatched to various laboratories and used for in-house studies. Detailed washability studies on the coal 10mm revealed that theoretical yield of cleans at 10% ash level is very poor. Systematic reagent optimization studies for physico chemical processes as flotation and oil agglomeration were carried out, before operating the pilot plant. Pilot Scale Heavy Medium Cyclone tests on fraction $-10 + 3\text{mm}$ revealed that the yield of 24.8% at a clean coal ash level of 16.7 % is achievable. Similarly, in case of

the tests on fraction $-3 + 0.5\text{ mm}$ the yield of 30% at a clean coal ash level of 11.2 % is achievable. Pilot scale flotation test on the coal fines revealed that the yield of 19.2 % at a clean coal ash level of 13.1 % is achievable under the optimum operating conditions. Pilot scale oil agglomeration test on the coal fines revealed that the yield of 77 % at a clean coal ash level of 25% is achievable under the optimum operating conditions. By following beneficiation route of Heavy Medium Cyclone and flotation, the yield of 25.7 % at a clean ash level of 13 % is possible. Similarly, by following the beneficiation route of heavy medium cyclone and oil agglomeration, the yield of 42.1 % at a clean coal ash level of 16.6 % is possible.

STUDIES ON THE CLEANING POTENTIALITIES OF MEGHALAYA COAL AND DEVELOPMENT OF BENEFICIATION CIRCUIT (G.L. Coke Pvt. Limited, Meghalaya)

The objective of the programme is to develop beneficiation scheme based on washability characteristics of Meghalaya coal for production of washed coal having ash content 5 to 10%. As per the project proposal, one ROM coal sample was collected. Size analysis, washability tests and related analytical tests were done as per the programme. On the basis of the washability data

obtained from the F&S tests, a schematic flow sheet was developed. The theoretical yield is about 82.0 at 8.1 ash level. The coal can be effectively washed by incorporating heavy medium cyclone after crushing at 25mm.

PAPER PUBLISHED

1. Hydration of 3-cyanopyridine to Nicotinamide Over MnO₂ Catalyst, S. C. Roy, P. Dutta, L. N. Nandi, S. K. Roy, P. Samuel, S. M. Pillai, V. K. Koushik and M. Ravindranathan, Journal of Applied Catalysis. A General 290 (2005) 175.
2. Composition of Cr-spinel–An Ore Genetic Indicator of Kathpal Chromite Deposit, Sukinda Ultramafic Complex, Orissa, India–Amit Kumar Sen, Pravind Kumar Sharma, Debadutta Mohanty, Tamal K. Ghosh, Current Science, Vol. 88, No. 10, 25 May 2005.

PAPER FOR SYMPOSIUM

1. PGE Mineralization Associated with Sukbinda Chromite Deposit, Orissa, India – An Ore Genetic Model–A. K. Sen and D. Mohanty, 10th International Platinum Symposium on Platinum Group Elements– from Genesis to Beneficiation and Environment Impact, Geological Survey of Finland, Oulu, Finland, Aug. 8-11, 2005.

HINDI PAKHWARA

Hindi Pakhwara was inaugurated by Dr. Bahura Ekka, Vice Chancellor, Vinoba Bhave University, Hazaribagh on 1st Sept. 2005. In his address he stressed upon the need of Hindi in day-to-day official work. Dr S. C. Roy, Acting Director in his address spoke on the action taken in the institute for implementation of Hindi.

A Kavi Gosthi was also organised on this occasion. Following poets participated in this programme S/Shri S. Chaka Chowndh from Varanasi, Mithilesh Gahamari from Gahamar, Shayamol Majumdar from Lucknow and Kumar Brijendra from Ranchi. Audience enjoyed the poem read by these poets.

CSIR FOUNDATION DAY

CSIR Foundation Day was celebrated on 26th September 2005. On this occasion Dr A.P. Mitra, Ex-DGSIR was the Chief Guest and delivered 64th CSIR Foundation Day lecture on the subject “Science and Changing World”. His lecture was very much informative. Dr S. C. Roy, Acting Director in his welcome address spoke about the brief history of CSIR and its importance in the development of science in the country. Dr S. K. Srivastava, Scientist ‘F’ proposed vote of thanks. In the afternoon programme Dr S. C. Roy gave away mementos, shawls and Sanmman Patra to the retirees. Persons who completed 25 years of continuous service were also given mementos by Dr S. C. Roy, Acting Director. Prizes to the children, winners of essay writing competition and mementos to the judges of essay competition were also given by Mrs. Sunanda Mitra.

VISIT OF SECRETARY, DEPTT. OF COAL, GOVT. OF INDIA, NEW DELHI

Shri P. C. Parekh, Secretary, Deptt. of Coal, Govt. of India, New Delhi visited CFRI on 15 July 2005. He had discussion with Dr S. C. Roy, Acting Director and other Heads of Division. He visited pilot plants of Drop Tube Furnace, Fuel Evaluation Test Facility Plant (FETFP), Fine Coal Treatment Pilot Plant, Fisher Tropch Process, Gas Liquid Technology. He also interacted with the scientists working at the plant. He appreciated the work done by CFRI scientists and advised them to work in collaboration with CMPDI, Ranchi and CMRI, Dhanbad for working on big projects to achieve more meaningful results.

INDEPENDENCE DAY CELEBRATED

59th Independence Day was celebrated on 15th August 2005. On this occasion National Flag was hoisted by Dr S. C. Roy, Acting Director at 9.00 a.m. in the morning in front of the main building. Staff members, security personnel and school children participated in this programme in large numbers. Dr Roy in his address spoke about the importance of day and apprised about the progress

made by the Institute in the last one year. Patriotic song was sung by students on this occasion to make the occasion momentous, it was liked by every one. Sweets were also distributed to the staff members and children.

ISO 14001:2004 AWARENESS TRAINING

There is great demand by the customer that CFRI must have International Environmental Management Standards. With this view, CFRI has planned to implement ISO-14001 for its Institute. On 28.07.05 a training programme was arranged to train some of the selected scientists/officers/staff members covering institutes all areas of activities. Shri A. K. Jena, TUV, India Private Limited, Mumbai was the faculty member for training. After training a mock exercise was also done.

NEW PROJECTS RECEIVED

1. Characterization and beneficiation of washery rejects from M/s. Aryan Coal Beneficiation Pvt. Limited, Rajendranagar, Bilaspur, Chhatisgarh.
2. Energy Audit of Jalgaon Zilla Sahapari Dudh Sangh, Shivaji Nagar Road, Jalgaon, Maharashtra.
3. Sampling and analysis of imported coal at Port ends HELLENICSEA, SAIL, 40, J. N. Road, Kolkata, West Bengal.
4. Thermal Energy Audit of firm Shantikunj Solvent Ltd., Chandrapur, Nagpur, Maharashtra.
5. Firm Arun Fuels, Chirkunda, Dhanbad for Consultancy during Design, Drawing Erection, Commissioning of Modified Chimney of Non-recovery Coke Oven.
6. DPL Coke Oven for Control of Heavy Black Emissions from DPL Coke Ovens, Durgapur, Burdwan, West Bengal.

MOU SIGNED FOR TECHNOLOGY TRANSFER

1. M/s. Hysons Industries (Pvt.) Ltd., Sheikh Mansion, Central Street, Hindpiri, Ranchi-834 001 for Process: Design know how for setting up ovens for production of coke for domestic uses (Soft Coke) on 20.07.05.

2. M/s Sigmah Fuel Industries, Ed. Jobla (Gram), P. O. Sikidiri, Ranchi, Behind Public Urdu Library, Main Road, Ranchi-834 001 for Process: Design know how for setting up ovens for production of coke for domestic uses (Soft Coke) on 20.07.05.
3. Firm Talha Enterprises, Khapu Tungri, T-Rampur, Silli, Ranchi-835101 for Process: Setting up ovens for production of coke for domestic uses (Soft Coke) on 21.07.05.
4. Firm Maa Jagdamba Coke Industries, Dudhigaon, P. O. Mandu, Hazaribagh for Process: Setting up ovens for production of coke for domestic uses (Soft Coke) on 27.09.05.
5. Firm Shiv Coke, Chatti Bazar, Ramgarh, Cantonment, Hazaribagh, Jharkhand for Process: Setting up ovens for production of coke for domestic uses (Soft Coke) on 27.07.05.

PATENT INFORMATION: COAL AND ITS UTILIZATION

1. United States Patent No. 6,929,330, August 16, 2005

Title- Method and system for mining hydrocarbon-containing materials

Inventors- Drake, Ronald D. (Lake Arrowhead, CA); Kobler, Michael Helmut (San Francisco, CA); Watson, John David (Evergreen, CO)

Abstract- The present invention is directed, inter alia, to devices and methods for excavating valuable materials, particularly soft ores such as oil sands, oil shales, and the like, that use one or more of a number of features, including backfilling for ground support, a small trailing access tunnel, processing of the valuable material in the excavation with the tailings optionally being used as backfill and the valuable material being transported to the surface, a plurality of movable shields for ground support, and/or a movable tail shield to provide interim support to the backfill while additional liner sections are installed and/or formed.

2. United States Patent No. 6,933,323, August 23, 2005

Title- Production of stable olefinic Fischer-Tropsch fuels with minimum hydrogen consumption

Inventors- O'Rear; Dennis J. (Petaluma, CA); Lei, Guan Dao (Walnut Creek, CA)

*Abstract-*The present invention relates to a stable, low sulfur, olefinic distillate fuel blend component derived from a Fischer-Tropsch process and a process for producing this stable, low sulfur, olefinic distillate fuel blend component. The stable, low sulfur, olefinic distillate fuel comprises olefins in an amount of 2 to 80 weight percent, non-olefins in an amount of 20 to 98 weight percent wherein the non-olefins are predominantly paraffins, oxygenates in an amount of less than 1 weight percent, and sulfur in an amount of less than 10 ppm by weight. A distillate fuel comprising the above blend component forms less than 5 ppm peroxides after storage at 60° C for four weeks.

(Source-www.uspto.gov)

WORLD AROUND

NEW PLANET ON THE SOLAR BLOCK

Los Angeles, July 30 – It's icy, rocky and bigger than Pluto. And according to scientists who found it orbiting the sun, it's the newest planet on our solar system. The planet – the farthest known object in the solar system – is currently 9 billion miles (14.4 billion kilometers) away from the sun.

“This is the first object to be confirmed to be larger than Pluto in the outer solar system,” Michael Brown, a planetary scientist at the California Institute of Technology, said on Friday in a telephone briefing announcing the discovery.

Brown labeled the object as 10th planet, but there are scientists who dispute the classification of Pluto as such. Astronomers do not know the new planet's exact size, but its brightness shows that it is at least as large as Pluto and could be up to 11/2 times bigger. The research was funded by Nasa.

Brown has submitted a name for the new planet to the International Astronomical Union, which has yet to act on the proposal, but he did not release the proposed name on Friday. The briefing was hastily arranged after Brown received word that a secure Website containing the discovery was hacked and the hacker threatened to release the information. Brown and colleagues Chad Trujillo of the Gemini Observatory and David Rabinowitz

of Yale University first photographed the object in 2003 using a 48 inch (122 centimeter) telescope at the Palomar Observatory. But it was so far away that its motion was not detected until data was analysed again this January. It will take at least six months before astronomers can determine its exact size. It has taken scientists this long to find the planet because its orbit is at an angle compared with the orbits of most planets. The new planet is rocky and icy, similar to Pluto, Brown said. Alan Stern of the Southwestern Research Institute in Boulder, Colorado, said he was not surprised by the discovery since other objects around the size of Pluto have been found in the Kuiper belt – a disc of icy debris beyond the orbit of Neptune.

What's unique about the latest finding is that the object appears to be bigger than Pluto, he said.

(Source – *The Statesman 31 July, 2005*)

CFRI IN MEDIA

1. 59th Independence Day celebrated at CFRI (*Aaj 17.08.05*)
2. Dr S. C. Roy takes over as Actg. Director of CFRI (*Hindustan Times 01.07.05*)
3. Craters in CFRI Campus: Probe Begins (*Hindustan Times 09.07.05*)
4. Ancient Source of Science for Development of Society: Dr A. P. Mitra (*Hindustan 17.09.05*)

EVENTS AHEAD

1. CFRI RC Meeting held on 28.10.2005
2. Vigilance Awareness Week 8-11 Nov. 2005
3. Jharkhand Establishment Day 15 Nov. 2005

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