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Functionally designed advanced ceramic material for addressing oil spillage: Field demonstration

Oil spill pollution, a severe environmental problem, which persists in marine environment or in inland water across the world, has grown to an alarming magnitude with increased levels of oil production and transport. New approach towards the search for new materials is inevitable to target removal of oil from marine and off shore oil spillage problem. The very basis of these new material, are magnetic, high surface area and environmental friendly. Red mud (aluminium industry waste) will be used to synthesis of iron titanium silicate mineral compositions. The material is processed to sub-micron or nano level by solid state reaction method. Particle size analysis of the sample is done to confirm submicron size particles. XRD phase analyses of the sample confirm presence of iron titanium silicate as major phase along with minor phases of silica and iron. It has been extensively tested for oil removal and can easily take about 50-70% of its original weight. It is also fire resistant and therefore while transferring its risk of fire is negligible. The use of this material has been tried at semi-pilot plant level during oil spillage incident at Mumbai, India. The result of the same is presented in the paper.

Biography

S S Amritphale is presently working as Chief Scientist at CSIR-AMPRI, Bhopal, which is an constituent institution of Council of Scientific and Industrial Research (Ministry of Science and Technology, Govt. of India). The Areas of current R&D activities of Dr. Amritphale are among the a) Nano materials: Advanced nano materials synthesis and characterizations, b) Advanced green concrete from wastes for making geopolymers materials, c) Shielding materials: High energy radiation shielding materials from industrial wastes, d) Ceramic materials: Functional ceramic from industrial waste, e) CO₂ sequestration: Environmental pollution remediation, f) Water extraction: Advanced processes for water extraction and technologies, g) Metal removal: Hybrid precursors from agricultural waste utilization for removal of lead, copper & zinc- effluent treatment and energy h) Fuel cells: Development of low temperature hydrogen-oxygen alkaline fuel cells. He has five International and twelve national patent and has transferred two Know -How to industry for commercial exploitation. In the present conference he will be delivering key note address on the topics namely a novel application of rice husk - a resource of bio-oil for making super plasticizers useful for the application of geopolymers in oil field industry and functionally designed advanced ceramic materials for addressing oil spillage- Field demonstration.

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