



University of Central Florida

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Oil Spill Remediation that is Eco-Friendly and Economical

Using Fly Ash as Recyclable Sorbent for Oil Spill Clean-up

Alarmed by the devastating impact of oil spills to the environment, University of Central Florida researchers have found an effective method employing a mixture of fly ash particles to scavenge oil from oil-water mixture solution. Oil spills caused by tankers and barges have the potential to dump hundreds of millions of gallons of oil into the ocean and surrounding shorelines affecting the environment and its ecosystems in a major way. Conventional methods for removing oil include using toxic chemicals, which threatens the environment. This new technique handles oil spill wastes in environment-friendly manner without any use of toxic chemicals, providing an environmental solution to an environmental problem.

Every year, the United States generates approximately 70 million tons of residue from the combustion of powdered or ground coal, known as “fly ash.” Since fly ash particles can be obtained from the chimneys of coal-fired power plants they represent the perfect candidate to use for oil scavenging. Once scavenged, the wasted oil can either be recovered by desorption process or heat energy can be generated by way of combustion.

Technical Details

The method includes addition of plurality of functionalized fly ash particles (bound to reactive/hydrophobic groups) to oil-water mixture. Since fly ash particles have relatively low surface area, their surface property is tailored and functionalized. Thus, hydrophobic groups are attached to the reactive groups, which absorb oil from the oil-water mixture to form oil-laden fly ash particles. This can be further fed into a combustion process to generate heat from absorbed oil. Due to the presence of zeolite surfaces, this technique makes use of this waste fly ash by increasing its absorption capacity by 340%.

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Benefits

- Inexpensive process
- Non-toxic to the environment
- Energy recovery

Applications

- Oil spill clean-up
- Oil recovery

Tech Fields

Environmental Remediation

Keywords

Oil spill, oil scavenging, fly ash, environment, pollution, petroleum, cleaning beaches, marine

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If you or your company are interested in this opportunity, Contact:

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