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## CHARACTERIZATION OF COAL COMBUSTION MATERIAL FOR ITS APPLICATION IN GEO-ENVIRONMENTAL ENGINEERING

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Coal combustion residue has gained immense importance in the field of material science and engineering due to its wide application. Fly ash which gets generated from the burning of coal in the thermal power plant during the production of electricity has immense characteristics for its use in engineering. In this study, four different fly ashes were collected from the thermal power plant in India and they were tested to find out its morphological property using field emission scanning electron microscope (FESEM), chemical composition using x-ray fluorescence (XRF), geotechnical properties, contaminant retention capacities using batch equilibrium test etc. The classification of fly ashes was made based on the oxide composition ( $\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3$ ) as recommended by ASTM C618-05 code of practice. It was observed that for class F fly ash, majority of the particles are spherical in shape. This spherical shaped particle indicates the presence of high amount cenosphere which acts as storage house for contaminants. The image of high calcium class C fly ash showed the presence of sharp platy structure. This was due to presence of glassy particles which are most likely to be found in C class fly ash. The study evaluated and demonstrated the properties of class F and C Indian fly ash and its application in geotechnical engineering field.

## BIOGRAPHY

Abhijit Deka has completed his PhD from Indian Institute of Technology Guwahati, India. He is the Assistant Professor of Central Institute of Technology Kokrajhar, India. He has over 10 publications and has been serving as a reviewer of reputed journal.

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