
Departmental Seminar

Seminar Title	: Stabilization of Red Mud Using Alumina-Silicate Based Mineral Precursors
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Venue	: Seminar Room, CE
Date and Time	: 18 Apr 2024 (11AM)
Abstract	: Red mud (RM) is a bauxite residue produced from aluminum industries either from Bayer process or from sintered process at high temperature (150–250 °C) and high pressure (3.5 MPa). The high alkaline nature (pH value of 10-13) and hazardous heavy metal ions of RM causes serious environmental issues by polluting surrounding soil and water bodies. During the past decade more research is focused on stabilizing RM and its utilization as a construction material for geotechnical applications. Stabilization of RM using alumina-silicate based industrial by-products contributes in the formation of cementitious products through geopolymerisation and enhances its engineering properties. Hence, in the present study an attempt is made to stabilize RM using different industrial precursors such as fly ash, ground granulated blast furnace slag, rice husk ash, and bagasse ash. Lab investigation is carried out to access the index, engineering and microstructural properties of stabilized RM at different additive contents (0%, 10%, 20% and 30%) and curing periods (1, 3, 7, 28, and 90 days). The chemical reactions in RM-additive mixes are further enhanced using different concentrations of sodium hydroxide solution (0.5, 1, 2, 4, and 8M). The metallic ion encapsulation behavior of stabilized RM is accessed by conducting leachate analysis. Further the influence of polyester fiber (0.25%, 0.5%, 0.75%, 1%, 1.25%, and 1.5%) on stabilized RM is evaluated based on mechanical and microstructural properties.