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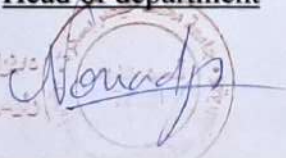


Alkali-activation of aluminosilicate materials on geopolymerization

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Alkali-activation of aluminosilicate materials on geopolymerization**ZADRI Hanane ^{1,*}, TEBBAL Nadia ², RAHMOUNI Zine el Abidine³ and MAZA Mekki ⁴***Civil Engineering Department / Geomaterials Development Laboratory, University of M'sila, Algeria***(*Hanane.zadri@univ-msila.dz: [+213669643283](tel:+213669643283))****Abstract**

Alkaline activation of aluminosilicate materials is a fundamental step in the geopolymer manufacturing process. Alkaline activators are used to accelerate the dissolution of the aluminosilicate source and the formation of aluminosilicate gels (initiating the geopolymerization reaction). Commonly used alkaline activators are sodium or potassium hydroxide. Depending on the nature of the raw material used, amorphous substances (gels) may be formed. Several variables influence the alkaline activation process: the type and composition of the raw materials, the nature and concentration of the activator, the temperature and the curing time. When the aluminosilicate raw material comes into contact with the alkaline solution, an amorphous to semi-crystalline matrix (geopolymer) is formed through a chemical process known as geopolymerization. The transformation of a solid aluminosilicate source into a geopolymer matrix can be summarized in three steps: dissolution of the amorphous aluminosilicate source in the alkaline solution creates a supersaturated solution of SiO₂ and Al₂O₃. This is followed by the formation of large networks by polycondensation and the increase of the gel network. The result is a three-dimensional geopolymer matrix with good mechanical strength, high resistance to chemical attack and resistance to high temperatures.

Keywords: alkaline activation, geopolymerization, aluminosilicate materials, geopolymer.*Please choose only one box for each item.***Presentation:**☐ Oral☒ Poster**Abstract Topic:**☐ Materials for renewable energy☐ Smart materials☒ Sustainable materials☐ Environmental impact of materials