



Ministry of Higher Education and Scientific Research  
Akli Mohand OULHADJ University – Bouira  
Faculty of Applied Sciences  
Process Engineering Department



1st National Seminar on Process Engineering: Environmental Challenges and Industrial Development (NSPE-25)  
Onsite – Online (Hybrid)

# CERTIFICATE OF PARTICIPATION

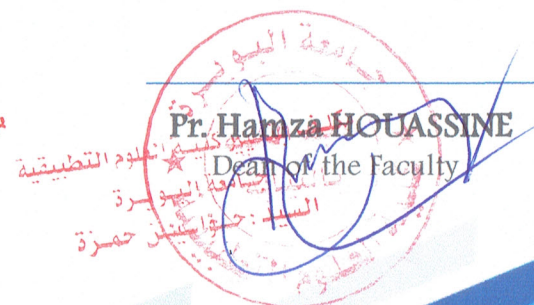
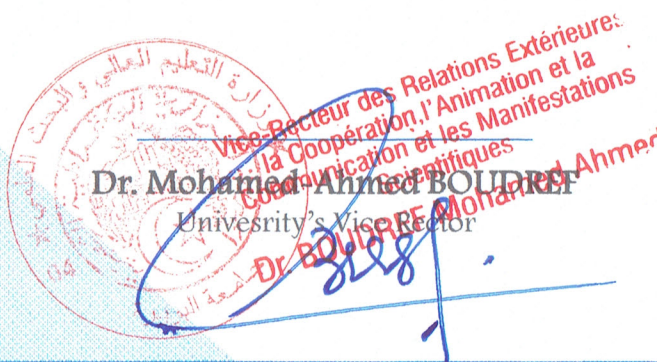
This certificate is awarded to

**Hanane ZADRI**

in recognition of their contribution with a Poster Online Presentation

titled: Effect of activator chemistry on the strength development of geopolymers systems: review  
in the 1st National Seminar on Process Engineering: Environmental Challenges and Industrial Development  
(NSPE-25), held on December 06-07, 2025 at Akli Mohand OULHADJ University–Bouira, Algeria

Co-authors: Nadia TEBBAL, Zine el Abidine RAHMOUNI, Mekki MAZA, Nour elhouda BENGHALEM





# 1<sup>st</sup> National Seminar on Process Engineering: Environmental Challenges and Industrial Development

Hybrid Format: Onsite & Online

NSPE-25

## ABSTRACT TEMPLATE

### **EFFECT OF ACTIVATOR CHEMISTRY ON THE STRENGTH DEVELOPMENT OF GEOPOLYMER SYSTEMS: REVIEW**

Hanane Zadri<sup>1</sup>, Nadia Tebbal<sup>2</sup>, Zine el Abidine Rahmouni<sup>3</sup> Mekki Maza<sup>4</sup>, Nour elhouda  
Benghalem<sup>5</sup>

<sup>1 3 4 5</sup> Geomaterials Development Laboratory, Civil Engineering Department, Faculty of Technology, M'sila  
University, M'sila 28000, Algeria

<sup>2</sup> Institute of Technical Urban Management, Geomaterials Development Laboratory, M'sila University,  
M'sila 28000, Algeria

Corresponding Author: [hanane.zadri@univ-msila.dz](mailto:hanane.zadri@univ-msila.dz)

#### **Abstract**

The Portland cement manufacturing industry generates harmful substances such as carbon dioxide, nitrogen oxides and sulphur dioxide, which have a negative impact on the environment. We therefore need an alternative material, namely geopolymer. These have similar or superior properties to Portland cement. Geopolymers are obtained by alkaline activation of aluminosilicate materials. However, one of the disadvantages of geopolymers is that they require more expensive alkaline activators, such as NaOH and Na<sub>2</sub>Si<sub>3</sub>, than traditional binders, to activate the precursor, and they present risks of corrosion. This review offers a perspective on the role of geopolymers and the development of innovative solutions to overcome their disadvantages and in advancing a sustainable future, notably by reducing their impact such as replacing the activator solution with water to reduce the use of alkaline activators. Use of magnesium hydroxide in the manufacture of geopolymers. Or they offer a gentler, more environmentally-friendly approach to activating aluminosilicate materials.

**Keywords:** Geopolymer, alkaline Activation, Aluminosilicate materials, Activator, Carbon dioxide