



**“Gheorghe Asachi” Technical University of Iasi, Romania**



---

## **NANOMATERIALS IN CONSTRUCTION AND THEIR POTENTIAL IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT**

**Saeed Kamali<sup>1\*</sup>, Sonia Sanajou<sup>2</sup>, Mohammad Nima Tazehzadeh<sup>3</sup>**

<sup>1</sup>*Civil Engineering Department, Middle East Technical University, 06800, Ankara, Turkey*

<sup>2</sup>*Faculty of Pharmacy, Eastern Mediterranean University, 99628, Famagusta, North Cyprus, Via Mersin 10, Turkey*

<sup>3</sup>*Civil Engineering Department, Eastern Mediterranean University, 99628, Famagusta, North Cyprus, Via Mersin 10, Turkey*

---

### **Abstract**

Over the last few years, the use of nanomaterials in the construction industry has grown prominently. Nanomaterials can considerably modify the properties of construction materials and even improve their performance. Despite their merits, considerable research has reported that nanomaterials pose a potential risk to human health. For this reason, it is important to fully comprehend the effects of nanomaterials on human health and the environment throughout all phases of their life cycle, including manufacturing, construction use, and recycling, in order to ensure their responsible usage. This research reviews the use of nanomaterials to enhance the properties of conventional construction materials as well as the possible adverse exposure scenarios for humans and the environment. Moreover, the potential risks and negative biological effects of these materials on human health are debated. This study serves to raise awareness of the potential hazards of nanomaterials, especially on human health and the environment.

*Key words:* construction industry, environment, human health, nanomaterials, toxic effects

*Received: October, 2018; Revised final: March, 2019; Accepted: March, 2019; Published in final edited form: November, 2019*

---

---

\* Author to whom all correspondence should be addressed: e-mail: [saeedkamali2002@gmail.com](mailto:saeedkamali2002@gmail.com), [saeed.kamali@metu.edu.tr](mailto:saeed.kamali@metu.edu.tr); Phone: +90 5396973159