



SEMINARS



**UNIVERSITÀ
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Dipartimento di
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April 6, 2022

Alkali activation of metallurgical slags

Speaker: Petra Matějková, Researcher at Centre for Advanced Innovation Technologies, VSB – Technical University of Ostrava, Czech Republic

Time: 10:00 am – 10:45 am

The presentation will be dedicated to the research conducted within the Smart Metallurgical Waste Management project. Evaluation of the suitability of crystalline powder activators for the activation of granulated blast furnace slag and its mixtures with low calcium fly ash will be introduced. The effect of the type of solid powder activator on the final properties of the hydration products will be demonstrated using sodium metasilicate and disodium silicate pentahydrate used for the slag activation. The discussed properties of the hydration products include the evolution of the compressive strength of the prepared alkali activated materials after their hydration for 2, 7, 28 and 56 days. The character of the hydration products is described using XRD, FTIR, and SEM techniques. The positive effect of the thermal treatment of the prepared samples at 400 °C on their compressive strength will be discussed during the lecture.

Coffee Break: 10:45 am - 11:00 am

Graphitic carbon nitride and its potential applications.

Speaker: Vlastimil Matějka - associated professor in the Faculty of Materials Science and Technology at VSB - Technical University of Ostrava

Time: 11:00 am – 11:45 am

Graphitic carbon nitride is a well-known and widely studied semiconductor with various possible applications. For instance, it can be used in photocatalysis, sensors, hydrogen production, batteries, supercapacitors, and others. The main advantages of g-C₃N₄ include chemical, photochemical, and thermal stability, nontoxicity, and most importantly, low cost and ease of preparation. The narrower band gap energy (around 2.7 eV) compared to TiO₂ (3.2 eV) enables g-C₃N₄ to absorb VIS irradiation and thus significantly increase the efficiency of light-harvesting for applications based on photocatalytic processes. The systematic approach for optimizing the synthesis of g-C₃N₄ synthesis via thermal polycondensation of melamine using the DOE method and its application for the synthesis of different composite materials and their performance in the photodegradation of selected compounds will be presented within the lecture.

Girasole room - Polo Ferrari 2, via Sommarive 9, Trento