

SEMINARIUM RENTGENOWSKIE

Seminarium w trybie hybrydowym

Laboratorium SL-1 zaprasza na seminarium, które odbędzie się dnia 14.11.2023 r. o godz. 10:30 w Sali „D”

Tytuł Seminarium:

Structural properties of $\text{Ca}_{10.5-x}\text{Ni}_x(\text{VO}_4)_7$ orthovanadates:

XRD study at ambient and non-ambient conditions

Prelegent: mgr Houri Rahimi-Mosafer

Afiliacja Prelegentki: Instytut Fizyki. PAN

Orthovanadates have attracted significant research attention due to their potential applications across various fields, including optoelectronics, biomedicine, and catalysis. In this presentation, we explore the structural properties of a novel calcium orthovanadate, specifically $\text{Ca}_{10.5-x}\text{Ni}_x(\text{VO}_4)_7$, where some of the calcium ions have been partially replaced by nickel ions. We investigate these properties at both, room temperature and non-ambient conditions, through X-ray diffraction measurements. High-resolution X-ray powder diffraction experiments were conducted at the ID22 beamline at ESRF. The study of diffraction patterns at non-ambient temperatures indicates that the structure remains unchanged with temperature varies from 4 K to 1100 K, as confirmed by Rietveld refinements. In this work, we determine the unit cell size and atomic positions of $\text{Ca}_{10.5-x}\text{Ni}_x(\text{VO}_4)_7$ as functions of temperature. Additionally, we calculate the thermal expansion coefficient for these materials in relation to temperature using various models.

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