

## FOLLOWING THE THIN FILM GROWTH OF SQUARE-PLANAR Ni(II) COMPLEXES

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Homogeneous thin films are crucial for any application and can be prepared using various wet and vacuum techniques; especially in chemiresistive gas sensing, where the crystal size and conformation plays an important role, it is utterly important to prepare homogeneous thin films with uniform and repeatable morphologies. While vacuum processes enable precise control over the surface morphology, at the same time, can cause challenges during the evaporation.

We will present our findings about the preparation of homogeneous thin films (with a thickness of 50-300 nm) of square-based diamagnetic Ni(II) complexes,  $[\text{Ni}(\text{Hvanox})_2]$ , using low-temperature high-vacuum evaporation. We will present the analysis of the chemical and physical properties of the prepared thin films on various substrates which were characterized in detail using microscopic and spectroscopic methods: scanning electron microscopy (SEM), atomic force microscopy (AFM) and transmission electron microscopy (TEM) including 3D electron diffraction (3D ED), revealing rough surfaces with a dense arrangement of elongated, rod and needle-like nanocrystals. Microscopic characterization also helped us to understand the growth mechanism of the film by observing a seeding layer. X-ray photoelectron spectroscopy (XPS) confirms the elemental composition of the films along with the square-planar environment around the Ni(II) center.[1]

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[1] Sapre, A. U.; Vlček, J.; de Prado, E.; Fekete, L.; Klementová, M.; Vondráček, M.; Svora, P.; Cuza, E.; Morgan, G. G.; Honolka, J.; Kühne, I. A. Investigating the Thin Film Growth of  $[\text{Ni}(\text{Hvanox})_2]$  by Microscopic and Spectroscopic Techniques. *Nanoscale Adv* 2025, 7 (7), 2083–2091.