

# ONE-POT SYNTHESIS OF OXIDO-AMIDATE CLUSTERS WITH TETRAHEDRAL $M_4(\mu_4-O)$ CORE FOR TRANSITION METALS

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Zinc  $\mu_4$ -oxido-centered complexes have been widely used as versatile precursors and building units of functional materials [1]. However, the synthesis of analogous complexes based on other transition metals is highly underdeveloped, and in our previous work, we used organometallic routes for synthesizing oxide zinc complexes [2]. In contrast, the innovative approach presented in this study utilizes an inorganic method for synthesizing homometallic  $[M_4(\mu_4-O)L_6]$ -type clusters incorporating divalent transition-metal centers coated with bridging monoanionic organic ligand. To demonstrate the effectiveness of this method, a series of charge-neutral metaloxido benzamidates, including iron(II) and cobalt(II) clusters, were prepared using this method. The resulting complexes were characterized using various analytical techniques such as: elemental analysis, SC-XRD, FTIR and magnetic measurements. The developed synthetic procedure is potentially readily adaptable to other M(II)-oxido systems, paving the way for new oxido clusters with unique optoelectronic and self-assembly properties, enabling the discovery of new functional materials that were previously unachievable [3].

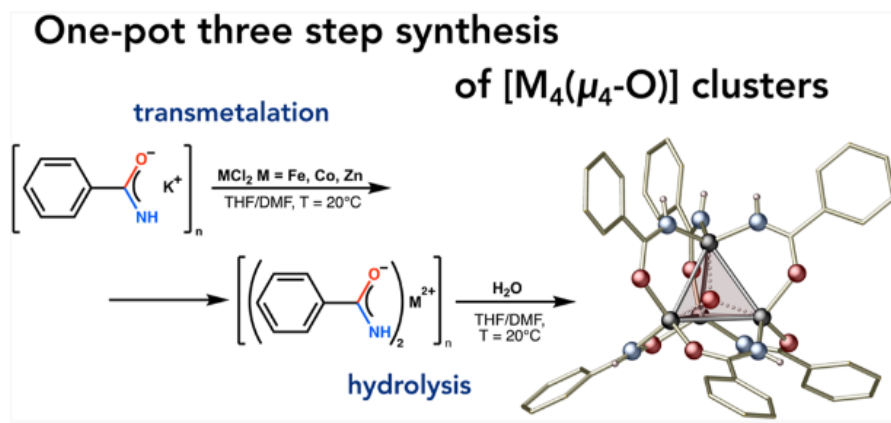


Fig.1 Scheme of the synthesis reaction of oxo-amidate complexes

[1] J.X. Liu; X.B. Zhang; Y.L. Li; S.L. Huang; G.Y. Yang *Coord. Chem. Rev.* **2020**, *414*, 213260

[2] W. Bury; I. Justyniak; D. Prochowicz; A. Rola-Noworyta; J. Lewiński *Inorg. Chem.* **2012**, *51*, 7410

[3] P. Krupiński; M. Terlecki; A. Kornowicz; I. Justyniak; D. Prochowicz; J. van Leusen; P. Kögerler; J. Lewiński *Inorg. Chem.* **2022**, *61*, 7869