**SYNTHESIS AND CHARACTERIZATION OF HYBRID NANO-NUTRIENTS FOR FISH PRODUCTION**

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**Abstract**

In this study, we have developed a preparation method of hybrid nano-nutrients with various shapes by applying the chemical synthesis method. The nano-nutrients were prepared by the reaction between various synthesized nanoparticles and common fertilizer sources with different bio-ingredients. High-resolution scanning electron microscopy, different spectroscopic analyses revealed that the powder particles have various shapes are formed. The size of these particles was varied between 20-300 nm. X-ray diffraction confirmed the structural analysis of the prepared nutrients and different analytical methods were used to study the physiochemical properties of the nano-nutrients.

**Keywords:** Nanotechnology, nano-nutrients, nanoparticles, fish production.