

# Nanocasting, Template Synthesis, and Structural Studies on Cesium Salt of Phosphotungstic Acid for the Synthesis of Novel 1,3,5-Triaryl-pyrazoline Derivatives

Razieh FAZAELI 1,\* , Hamid ALIYAN2, Shahram TANGESTANI NEJAD1, Esmaeel MOHAMMADI 1, Maryam BORDBAR3

1Department of Chemistry, Shahreza Branch, Islamic Azad University, 86145-311, Iran; 2Department of Chemistry, Mobarakeh Branch, Islamic Azad University, 84815-119, Iran; 3Department of chemistry, Faculty of Science, The University of Qom, 37185-359, Qom, Iran

Razieh FAZAELI 1,\* , Hamid ALIYAN2, Shahram TANGESTANI NEJAD1, Esmaeel MOHAMMADI 1, Maryam BORDBAR3

1Department of Chemistry, Shahreza Branch, Islamic Azad University, 86145-311, Iran; 2Department of Chemistry, Mobarakeh Branch, Islamic Azad University, 84815-119, Iran; 3Department of chemistry, Faculty of Science, The University of Qom, 37185-359, Qom, Iran

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**摘要** The elimination of the silica matrix of composites by HF occurred by a two-step reaction deposition of a  $\text{Cs}_{2.5}\text{H}_{0.5}\text{PW}_{12}\text{O}_{40}$  (CsHPW) salt nanocrystal. We used 2D hexagonal SBA-15 silica as a template for the nanofabrication of CsHPW nanoparticles. Nanocast CsHPW materials are stable against leaching and colloidization in polar solvents. The catalytic performance of the nanocast CsHPW materials exceeded that of bulk  $\text{Cs}_{2.5}\text{H}_{0.5}\text{PW}_{12}\text{O}_{40}$ , which is the most active among the acidic HPW salts. A series of novel 1,3,5-triaryl-pyrazoline derivatives were synthesized by the reaction between chalcone and phenylhydrazine in high yield in the presence of CsHPW salt nanocrystals.

**关键词:** [nanocasting](#) [nanoparticle](#) [green chemistry](#) [1,3,5-triaryl-2-pyrazoline](#) [polyoxometalate](#)

**Abstract:** The elimination of the silica matrix of composites by HF occurred by a two-step reaction deposition of a  $\text{Cs}_{2.5}\text{H}_{0.5}\text{PW}_{12}\text{O}_{40}$  (CsHPW) salt nanocrystal. We used 2D hexagonal SBA-15 silica as a template for the nanofabrication of CsHPW nanoparticles. Nanocast CsHPW materials are stable against leaching and colloidization in polar solvents. The catalytic performance of the nanocast CsHPW materials exceeded that of bulk  $\text{Cs}_{2.5}\text{H}_{0.5}\text{PW}_{12}\text{O}_{40}$ , which is the most active among the acidic HPW salts. A series of novel 1,3,5-triaryl-pyrazoline derivatives were synthesized by the reaction between chalcone and phenylhydrazine in high yield in the presence of CsHPW salt nanocrystals.

**Keywords:** [nanocasting](#), [nanoparticle](#), [green chemistry](#), [1,3,5-triaryl-2-pyrazoline](#), [polyoxometalate](#)

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