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1 **Fabrication of cobalt aluminate nanopigments by** 2 **coprecipitation method in threonine waterborne solution**

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8 **Abstract:** A novel cobalt aluminate (CoAl_2O_4) nanopigments with bright blue color
9 and good dispersibility was fabricated via a coprecipitation process of threonine.
10 Threonin acts as coordination and structure-directing reagents for the nucleation and
11 assembly of hydroxide precursor, limitation of the CoAl_2O_4 nanoparticle growth
12 during calcination process, and fine-tuning the molar ratio of Co/Al in final products.
13 The products were characterized with XRD, FESEM, TEM, FTIR, DLS, EDX,
14 ICP-AES and UV-vis. The particle size, colorimetric values and printing ink of
15 CoAl_2O_4 nanopigments with different amount of threonine and without threonine
16 were investigated. The study exhibited that the CoAl_2O_4 nanopigments with 0.1-0.2
17 mol/L threonine showed a smaller size of 10-20 nm, better dispersion and color
18 property than other test samples. The coloration mechanism of the CoAl_2O_4
19 nanopigments is also discussed.

20 **Keywords:** cobalt aluminum; nanopigments; coprecipitation method; coloration
21 mechanism

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