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# Electrophoretic deposition of anisotropic $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>/PVP/chitosan nanocomposites for biomedical applications

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**Key words:** porous layers; hierarchical structures; PVP/Chitosan interaction;

## Abstract

Electrophoretic deposition (EPD) has been used to fabricate composite coatings based on anisotropic hematite particles ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) comprising residual poly-N-vinylpyrrolidone (PVP) and chitosan (CHT) on stainless steel substrates. The experimental conditions towards homogeneous surface, non-delamination and good distribution of  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>/PVP particles are described. The coatings were characterized by SEM, XRD and TGA. A molecular interaction between PVP adsorbed on the surface of the particles and CHT is identified.

## 1. Introduction

Nanomaterials have attracted the interest of the scientific community for their interesting size- and shape- dependent properties allowing a variety of applications ranging from opto-electronics to catalysis. In particular, the combination of organic

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