

# New Pearlescent Pearl pigment

## Substrate-free colored plate-like particles

### Overview

Conventional pearl pigments were created by coating mica substrates with metal oxides, such as  $\text{TiO}_2$ . The traditional production process involved two main steps: preparation of the mica substrate and coating with metal oxides. This conventional method made it challenging to control the thickness of the metal oxide layer precisely, making it difficult to achieve stable pearlescent properties and control the hue. As a result, the process was often costly.

This patent introduces a method for producing pearl pigments that exhibit pearlescent properties through a simple and cost-effective process. The pigments comprise vanadium phosphate hydrates and possesses a substrate-free colored plate-like particles. It is possible to provide a strong glossy effect using the pigment with large particle sizes.

### Product Application

- Pearlescent pearl pigments (cosmetics, etc.)
- Automotive paints
- Gas sensing materials

### IP Data

IP No. : Jp2024-100285  
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 Admin No. : T24-003



### Features・Outstandings

本研究の実施例 > VOPとHVPのパール効果

> VOPのパール効果 & 角度依存性変化

Case 1

$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$
$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$

Case 4

$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$
$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$

Case 5

$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$
$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$

> HVPのパール効果 & 角度依存性変化

Case 2

$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$
$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$

Case 3

$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$
$\theta = 0^\circ$	$\theta = 15^\circ$	$\theta = 30^\circ$	$\theta = 45^\circ$	$\theta = 60^\circ$

SEM画像

Case 4: 221  $\mu\text{m}$

Case 3: 220  $\mu\text{m}$

Pure PMMA

PMMA composite

1 cm

25  $\mu\text{m}$

25  $\mu\text{m}$

### Related Works

[1]

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