

Practical and theoretical demonstration of colour and texture effects obtained by effect pigments

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Abstract

This lecture starts with an overview of structures (materials, sizes, thickness, and layer sequence) of recently used interference effect pigments and a demonstration of colouristic effects obtained in painted objects. Since those interference pigments are mostly applied in combination with other pigments (solid pigments, metal flakes) their colour mixing behaviour and the development of hiding power has to be considered for understanding the colouristic properties of realistic stylings. Quantitative validation of the additive colour mixture of interference pigments shows the range of colour effects, which can be reached by changing the pigment-volume concentration and the mixture ratio. The combination of microscopic techniques with angular texture and colour measurements allows an insight in the internal structure of a paint film (orientation and positioning of the plate-like effect pigments). Together with the knowledge on specific reflection properties $R(1)$, the surface structure of the effect pigments (flat, stepped and bended) as well as and the spec's of human eyes some criteria for the visibility of the effects can be derived for given lightening conditions.

Finally, the validity of these criteria will be demonstrated for colour travel and sparkle texture in directed and diffuse illumination conditions.