

An Experimental Approach for Modeling the Appearance of Metallic Painted Surfaces

Mijanur Rahaman Chowdhury, Kang-Yeon Kim, Hyun Jin Yoo,
Kwanghee Ko, Kwan H. Lee

Abstract Metallic paint is one of the most widely used coating in automotive, cosmetic and other applications because of its well-known ability to give a product realistic look which creates widespread consumer appeal. But, this coating has complicated subsurface structure which includes pigments, flakes, and transparent clearcoat. Though various analytic reflection models are available to simulate appearance of various surfaces, it is difficult to select an appropriate reflection model with faithful parameters for simulating this coating due to the complex subsurface structure of metallic paints. This paper presents a framework for accurate modeling of metallic coating by determining an appropriate reflection model among various existing BRDF (Bidirectional Reflectance Distribution Function) models. The selection of the appropriate model is achieved by measuring BRDF of various metallic paint samples using a BRDF measuring device i.e. gonioreflectometer and fitting an existing model to the measured data. Then, this model is effectively realized by rendering metallic painted surfaces. We believe that this framework can serve as a guide for those who wants to render metallic painted surfaces accurately with analytic BRDF model without expending time on extracting BRDF data using gonioreflectometer from real metallic paint sample.

(Key Word): BRDF, gonioreflectometer, metallic paint, subsurface structure ↵