



## A Study of Bi-Directional Reflectance Distribution Functions and Their Effect on Infrared Signature Models

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Biblioscholar Okt 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x9 mm. This item is printed on demand - Print on Demand Neuware - Since 2004, AFIT has been developing a trend-analysis tool to assess large commercial aircraft infrared (LCAIR) signatures. In many cases, this code predicted signatures to within 10% of measured data. However, other results indicated that the single-bounce, specular-reflection algorithm being used failed to adequately simulate interactions between aircraft parts where either the specular component is dominated by diffuse reflection or part-to-part multiple-bounce reflections contribute significantly to the signature; discrepancies greater than 100% were observed. This research incorporates Bi-Directional Reflectance Distribution Functions (BRDF's) and multiple-bounce calculations into the LCAIR model. A physical aircraft model was constructed from aluminum, and measurements were taken before and after a surface treatment in gloss black paint. The Sandford-Robertson model is used to parameterize the BRDF's of both the bare aluminum and gloss black paint. Since the most efficient method of integrating a BRDF depends upon the reflectance distribution of the aircraft material, the sampling resolution of the BRDF integral is crucial to an accurate simulation. 156 pp. Englisch.



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