Modeling Diffuse Plastic in LightTools

Authors

Introduction

Measuring the Scattering Properties of Plastic Materials

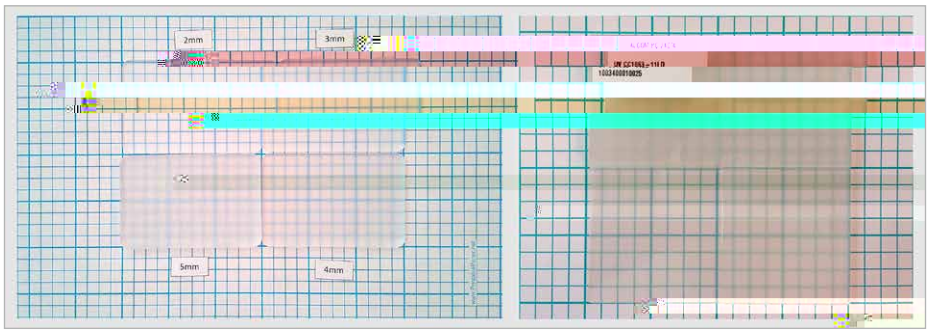


Figure 1: Samples for Evonik ACRYLITE Satinice DF23 (left) and ALBIS ALCOM PC 744/4 UV CC1063-11LD (right) that can be used for scattering measurements

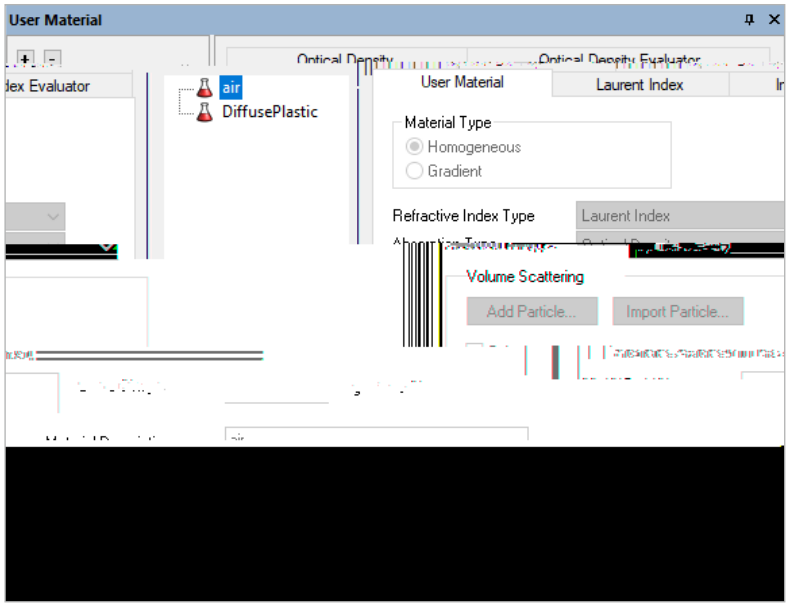


Figure 3: The User Material dialog box after a new material has been added

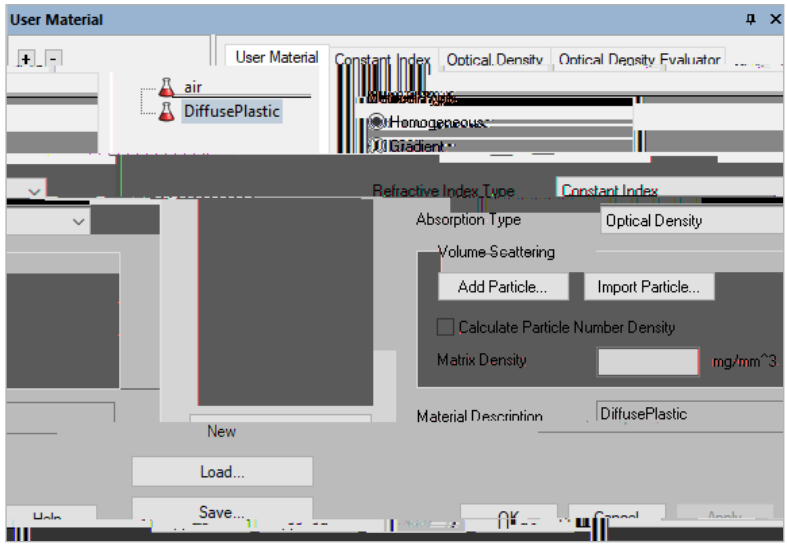


Figure 4: The initial state of the DiffusePlastic material

Models for Refractive Index and Dispersion

Name	Formula
Constant	
Index Interpolation	Set of wavelength-index pairs:
Cauchy	
Hartmann	
Sellmeier	

Glass Manufacturer's Sellmeier

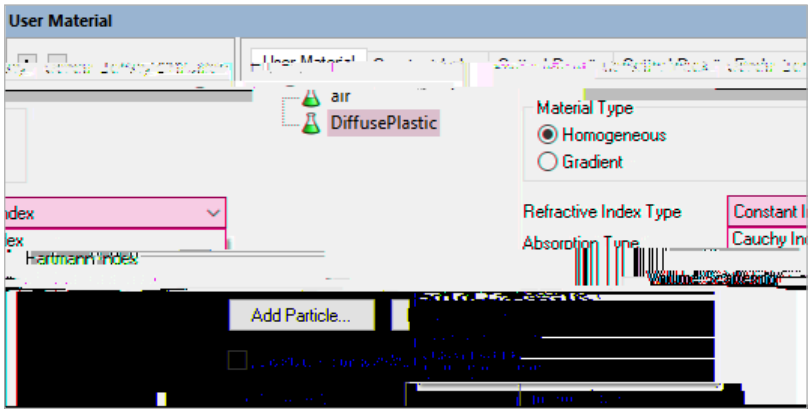


Figure 5: Refractive index types available for homogeneous materials

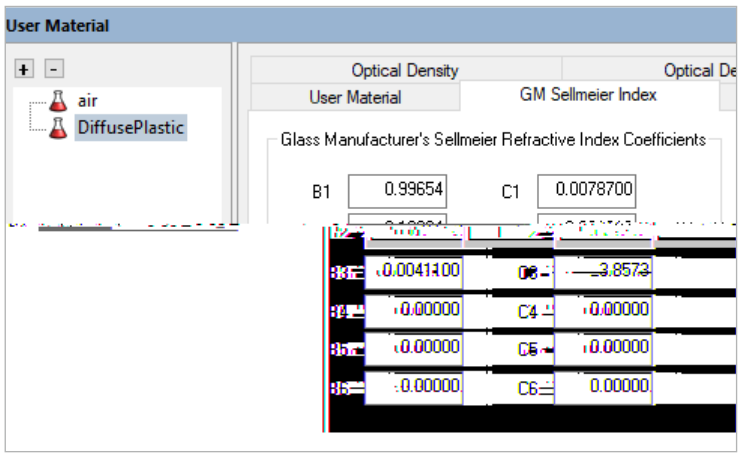


Figure 6: The Glass-Manufacturer's Sellmeier coefficients as entered from the Szczurowski 2013 data

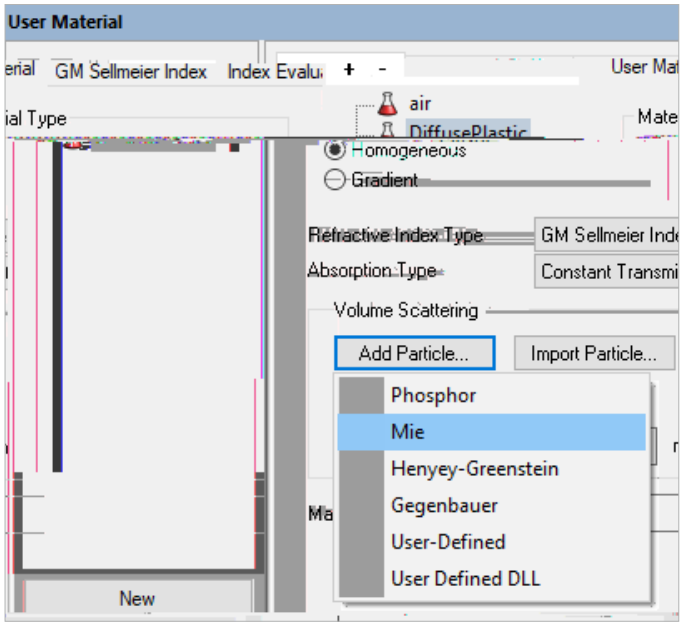


Figure 10: The list of available particle types

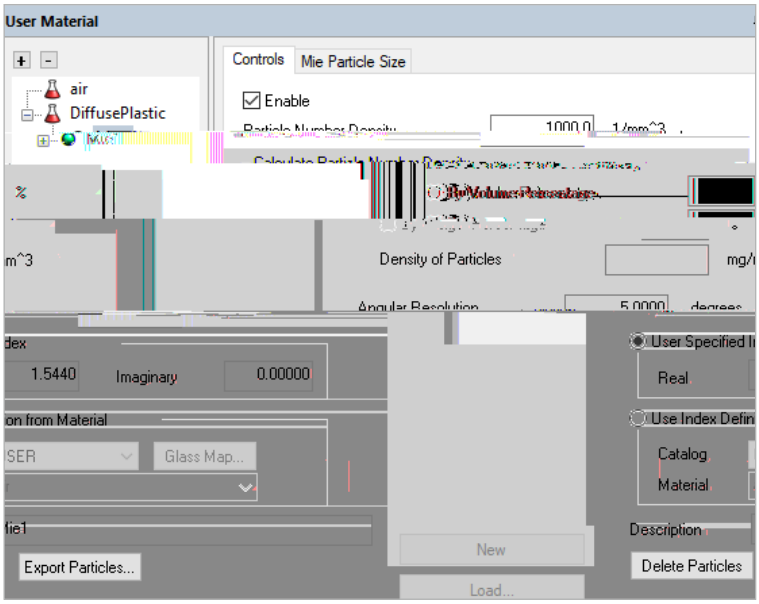


Figure 12: The available controls for a Mie particle

Figure 13: Material properties for the particles can be specified by entering the refractive index or by selecting an existing material

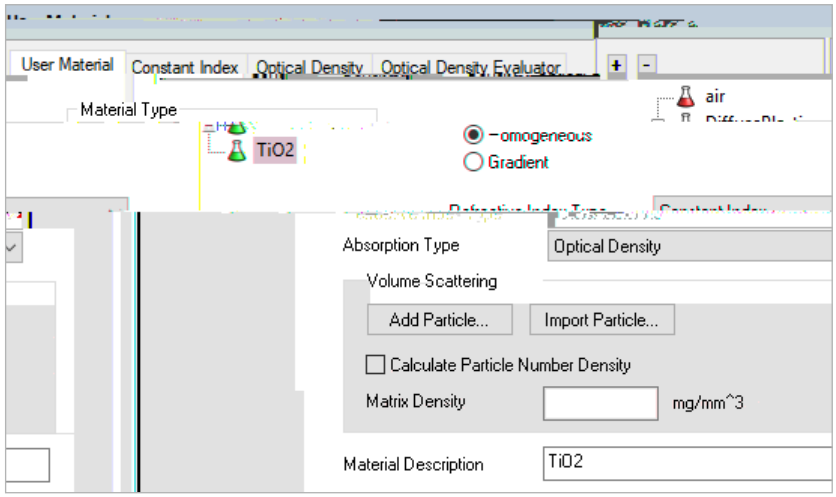


Figure 14: A new material has been created for TiO2

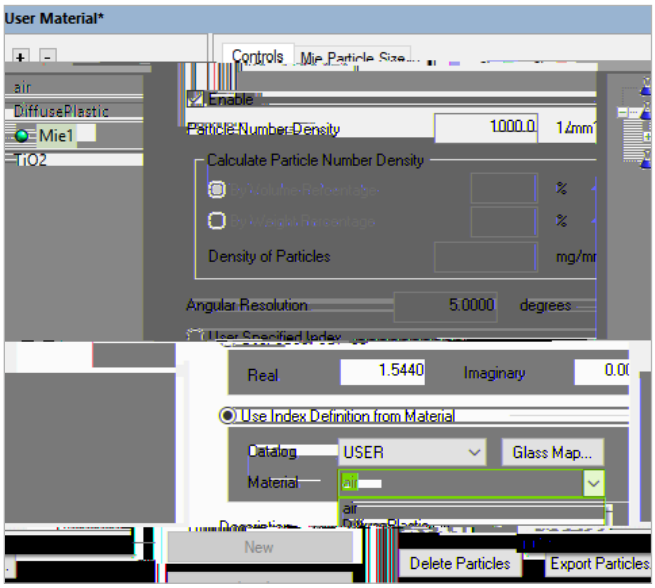
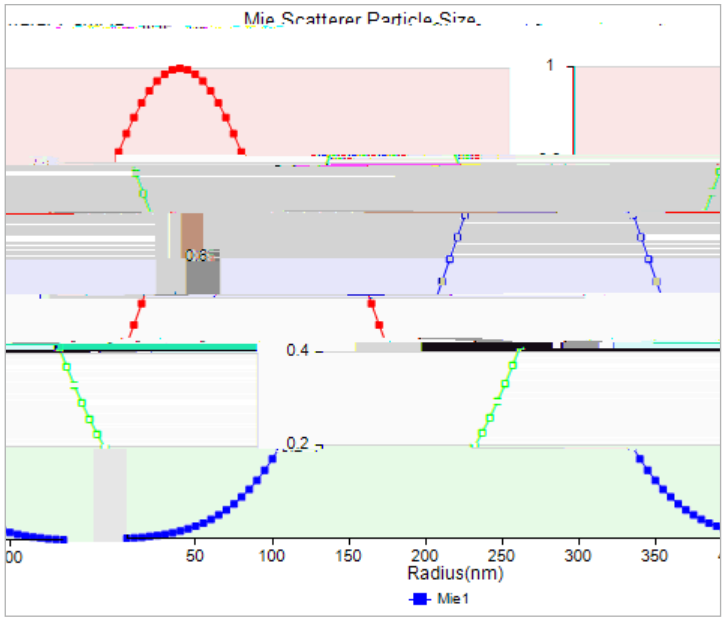


Figure 15: Once the particle's material has been created, it can be selected from the USER catalog

RCTCOGVGTU HQT VJKU GZCORNG ;QW ECP WUG C URTGCFUJGGV G I 'ZEGN VQ CPF YJQUG UVCPFCTF FGXKCVKQP Ä KU PO WUKPI VJG HQNNQYKPI GSWCVKQP


Mie Scatterer Particle Size
1
0.8
0.4
0.2
00
50
100
150
200
250
300
350
Radius(nm)
Mie1

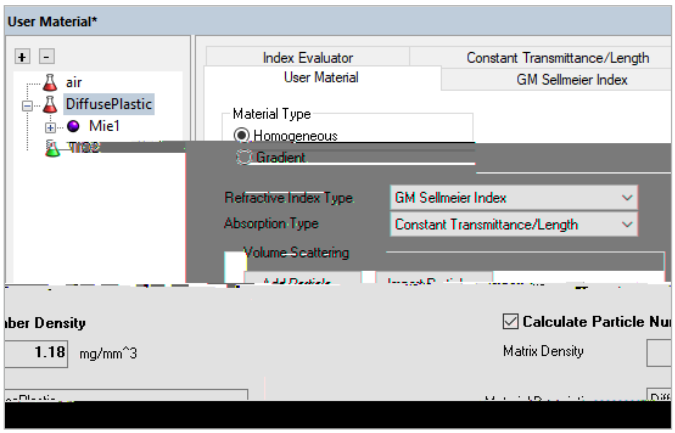


Figure 18: The density of the base material is entered on the User Material tab

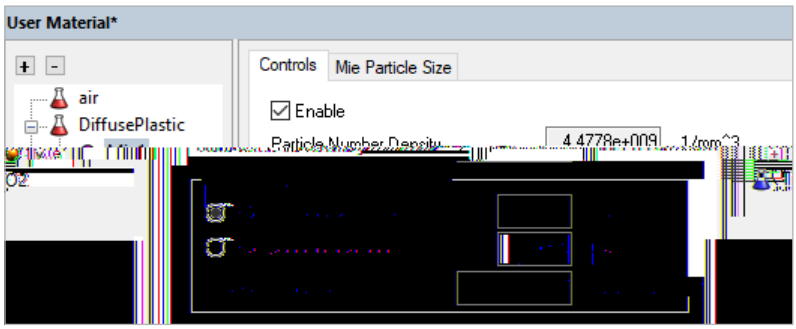


Figure 19: The density of the particles is entered on the Controls tab of the particle

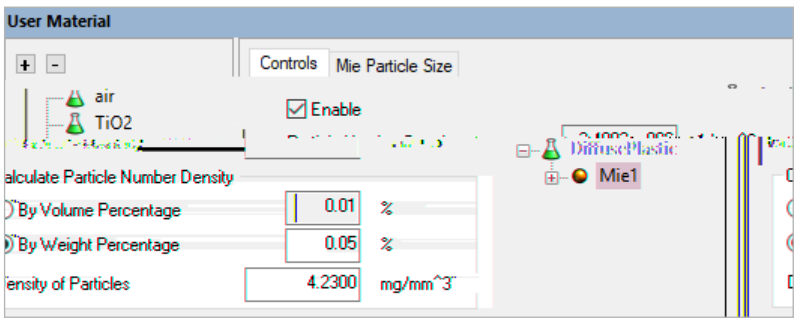
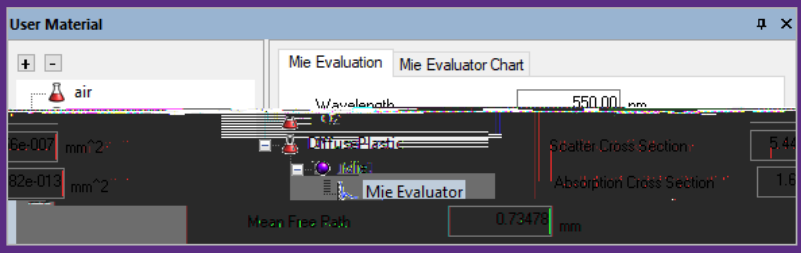


Figure 20: The concentration of the particles in this example is entered as a By Weight Percentage of 0.05%



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Pub: Sept. 2017