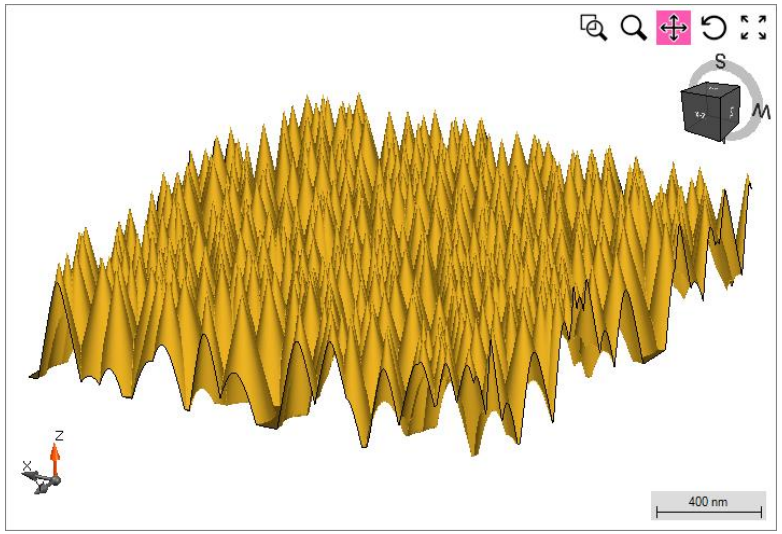
Statistical Anti-reflection Structures (Random Moth-Eye Structures)

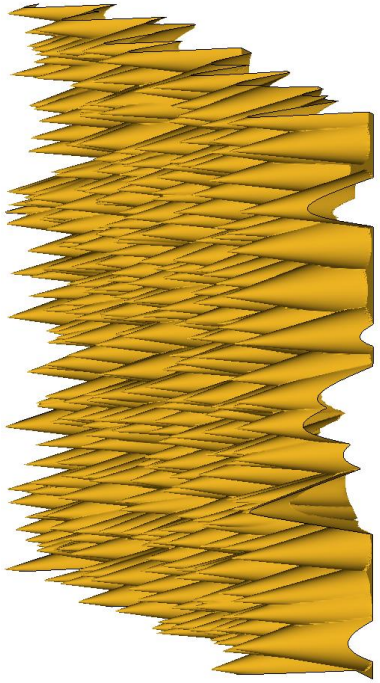
Abstract



In this demo we will model the moth-eye structure by a random (statistical) distribution of cones. For this purpose, the *Random Cone Interface* is used.

Task: Modeling of Statistical Moth-Eye Structures

plane wave
wavelength: 633nm



Moth-Eye structures
(statistically distributed cones)

?

reflectance

?

transmittance

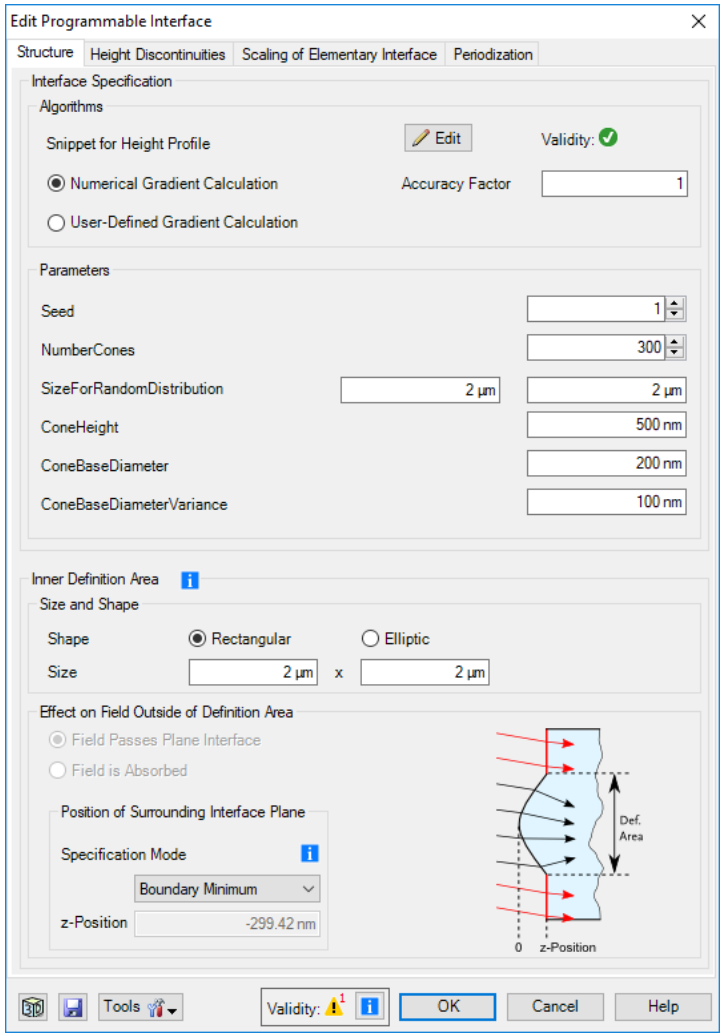
Random Cone Interface

The moth-eye structure is modeled by a random (statistical) distribution of cones.

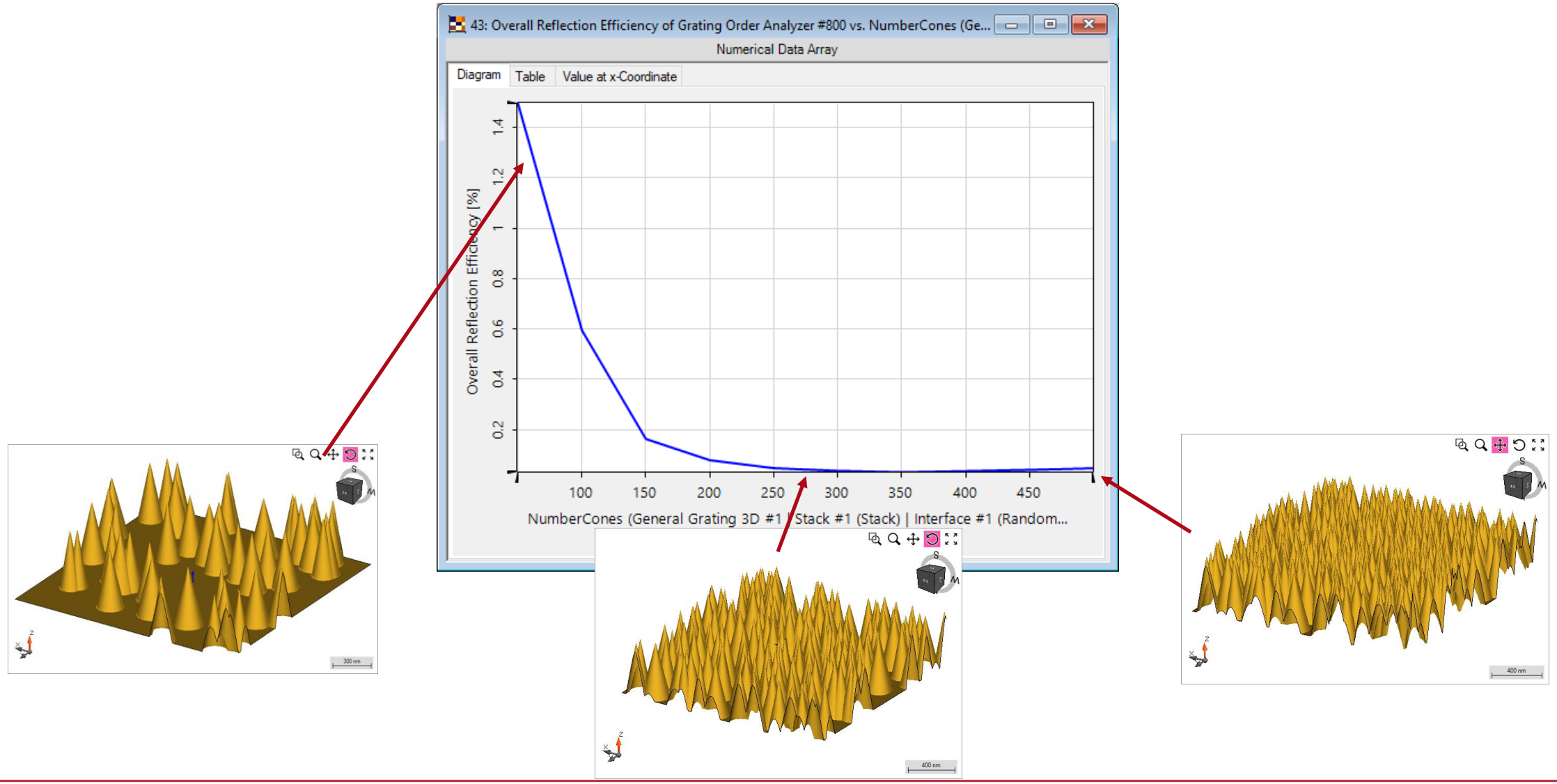
For this purpose, the *Random Cone Interface* is used.

The characteristics of the surface are determined by the following parameters:

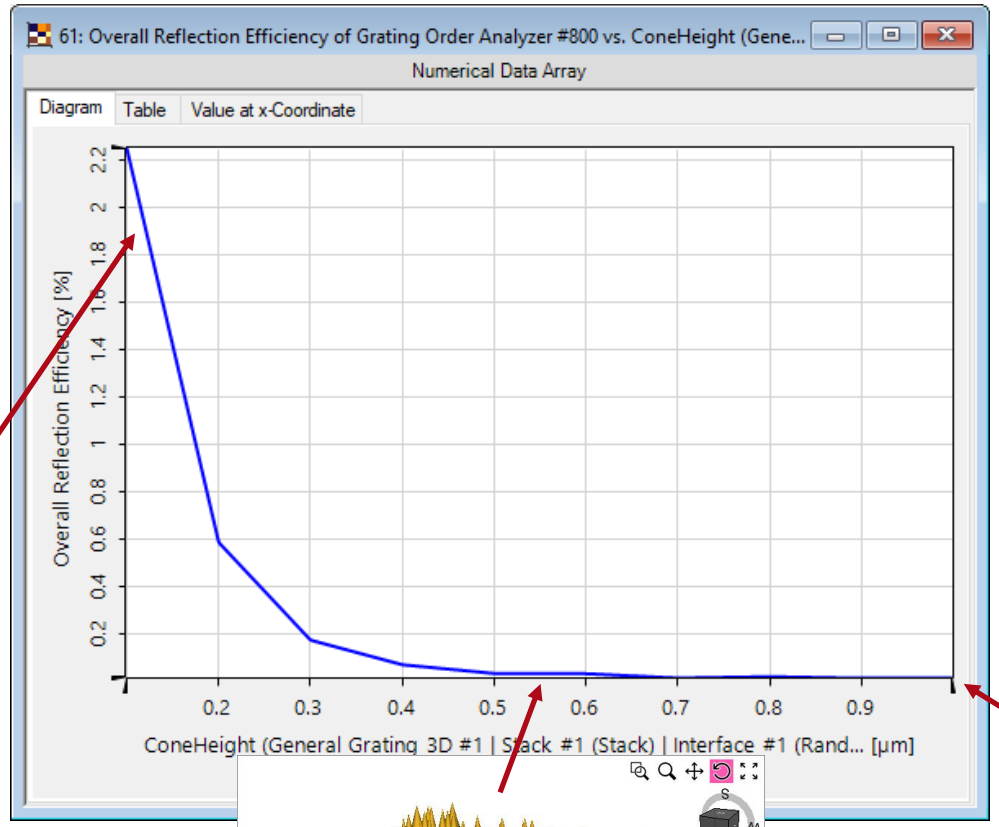
- number of cones (in the chosen definition area)
- height of cones (cones have constant height
- diameter of the cones at basis
- Variance of cone diameter
- size of *Definition Area* / Size for Random Disttribution
- period of interface

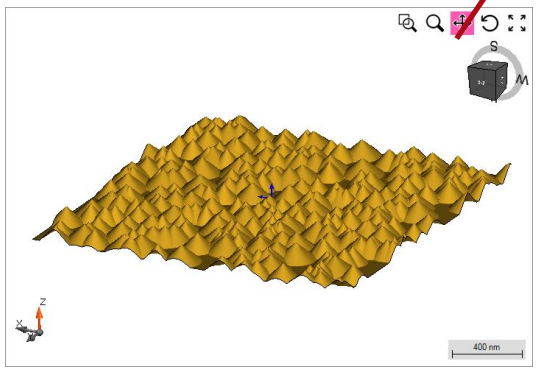


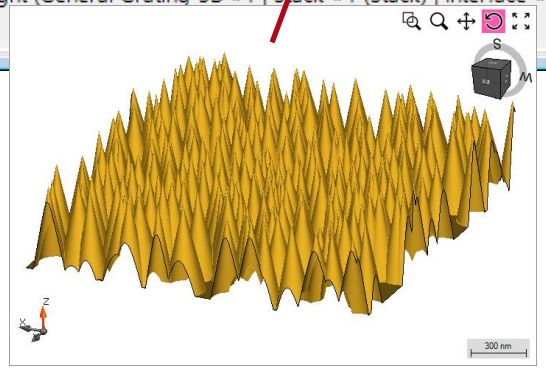
Result: Dependency on Number of Cones

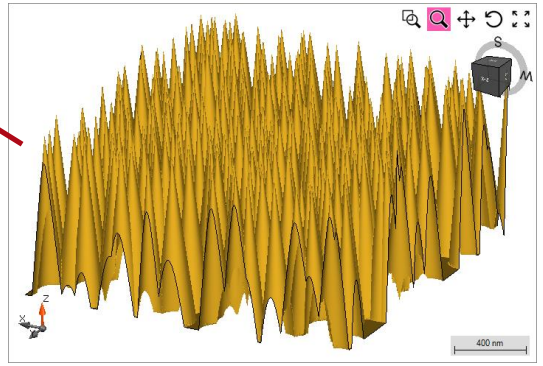


Result: Dependency on Height of Cones

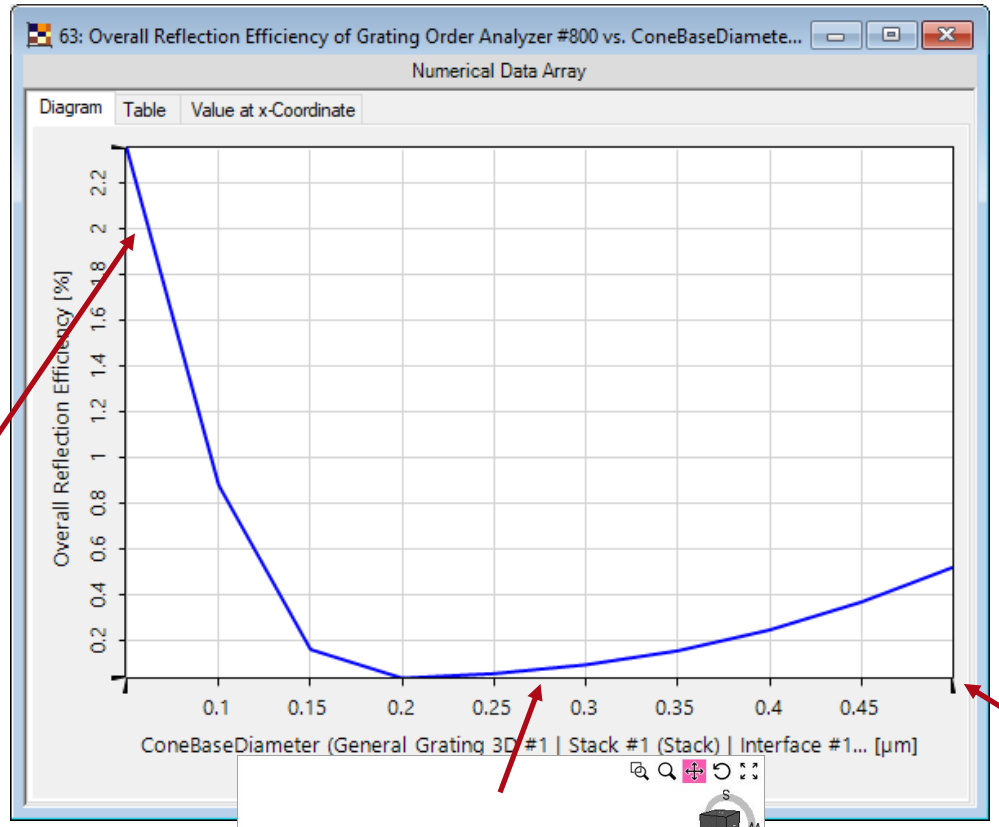


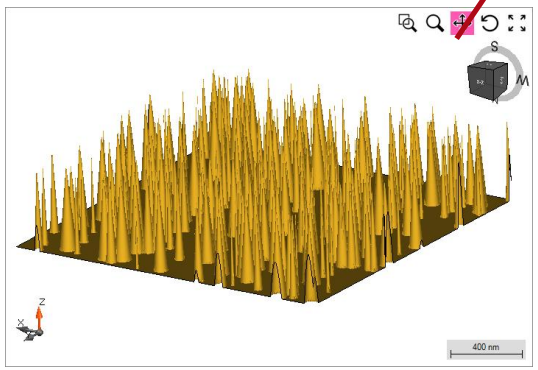


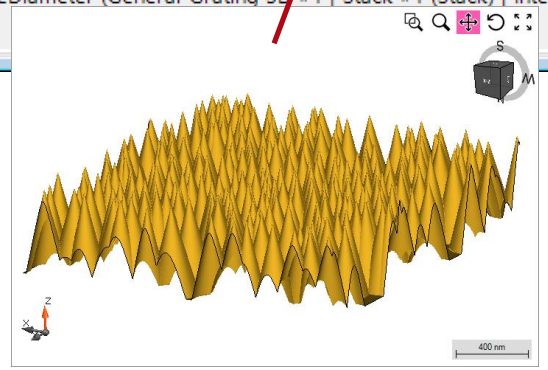


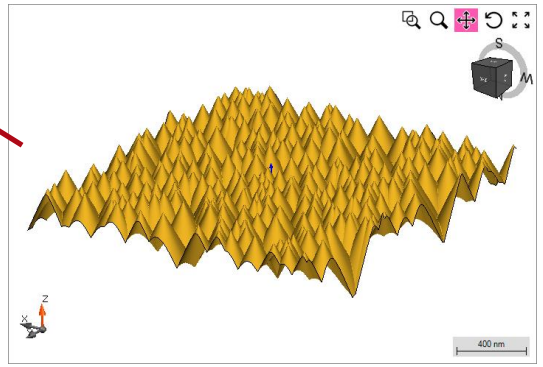


Result: Dependency on Base-Diameter of Cones









Document Information

title	Statistical Anti-reflection Structures (Random Moth-Eye Structures)
document code	Demo.11
version	1.0
VL version used for simulations	VirtualLab Fusion Summer Release 2019 (7.6.1.18)
category	Demo
further reading	- Rigorous Analysis and Design of Anti-Reflective Moth-Eye Structures