

Magic Balls

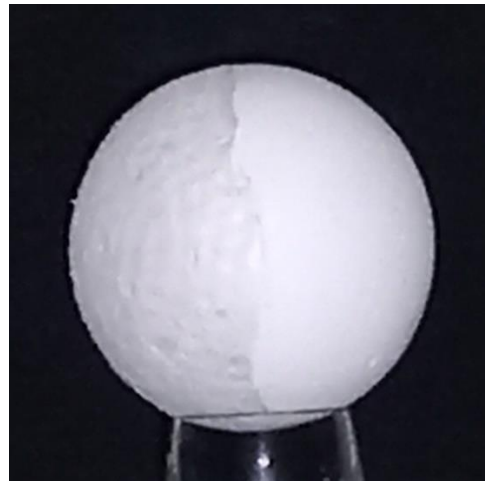
Magic Balls

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Abstract

There are no true images that comply with Lambert's cosine light scattering law.
There is no reasonable explanation to the uniform appearance of the full moon image.
There is no explanation at all of the uniform appearance of the "blue marble" the full earth image.



Left: Styrofoam ball.

Right: Ball's right coated with white paint; ball's left roughened with sanding paper



Electric bulb.



Enclosure for the bulb.



Left: Tennis ball

Right: Frosted plastic table tennis ball. The right side is coated with white paint.

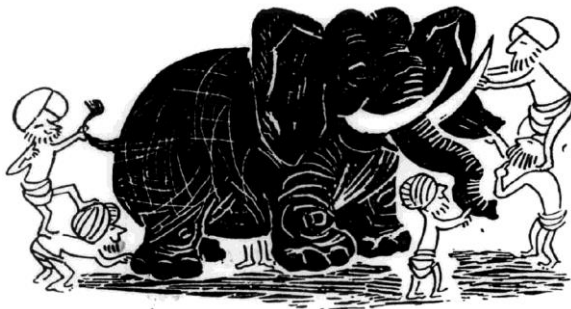


Egg

All the photos are flashed in the dark with a phone camera.



The full moon and the full earth, the "blue marble".



Elephant

One ball, a thousand theories. Seven balls even better.

Reviews:

Z.K. Kopal, *An Introduction to the Study of the Moon*, (Springer, 1966), p. 330
<http://pdf.to/bookinfo/an-introduction-to-the-study-of-the-moon.pdf/>

Michael K. Shepard, *Introduction to Planetary Photometry*, *Contemporary Physics*, 59(1):1-1. October 2017, (Cambridge, 2017)

Akkermans, E.; P. E. Wolf; R. Maynard, "Coherent Backscattering of Light by Disordered Media: Analysis of the Peak Line Shape". *Physical Review Letters*. 56 (14): 1471–1474 (1986).

Diffuse reflection

https://en.wikipedia.org/wiki/Diffuse_reflection

Coherent backscattering

https://en.wikipedia.org/wiki/Coherent_backscattering

Oren–Nayar reflectance model

https://en.wikipedia.org/wiki/Oren%E2%80%93Nayar_reflectance_model

by the author:

[Scattering of Directional Light](#)

https://www.researchgate.net/publication/358403822_Magic_Balls

On the net: February 2022

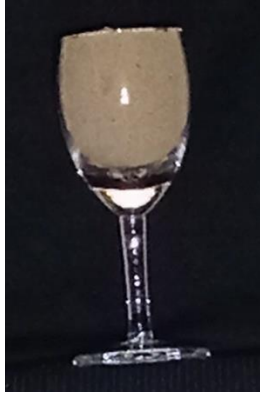
More Photos:



Milk and Honey



Funnels with Opaque white paint.



Sand



Table salt; Coarse and Fine

[Magic-Ball](#)