

**An interesting comment** by Nicolas Chevalier, PhD Student, CEA Saclay (freely translated from his e-mail)

I have just read on the website <http://www.physik.uni-augsburg.de/theo1/hanggi/History/BM-History.html> a presentation by you and an article by Peter W. van de Pass. The author van de Pass expresses the opinion that Jan Ingen-Housz had been the first to observe the Brownian motion and had briefly reported about that, so to speak, en passant.

I cannot agree to this interpretation: in this article Jan Ingen-Housz writes "perceiving the movement of small carbon particles on an alcohol drop as living movement". He immersed the carbon particles into alcohol to observe that raised evaporation velocities lead to quicker movement of the particles; this is not necessarily that Brownian motion in alcohol should somehow be stronger: the viscosity of alcohol is actually even a little bit higher (1.07 mPoise) than the viscosity of water (1.0 mPoise).

Attached please find a series of pictures:



about ~5 seconds have passed between each picture. I distributed CaCO<sub>3</sub> particles (~10 μm) on an alcohol surface. The particles move at unusual speed, in less than one minute they have assembled to one single "aggregate". The cause of this movement is Rayleigh Benard or Marangoni Benard convection: the surface of the alcohol gets cooled by the evaporation, a temperature gradient is created in the Petri dish which drives raising convection currents in the fluid. The particles follow the current lines of the Benard "roles". I believe that is what Jan Ingen-Housz has observed at that time. With water the aggregation happens within several hours. More about this phenomenon can also be read in Berg's article:

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