Millimeter Microscope under prototyping.Self (involuntary) focusing enabled. A microspheres or nanosphere employed as ball (thick) lens is coated with nanofilm of organic sample. The 'prepared' slide is hence convex. A nano SMD-LED illuminates slide from other end. The distance between eye & 'differentials' of slide vary from near zero to more than sphere's diameter. Eye involuntarily positions itself to get image in focus. The smaller the size of the sphere, the greater be its magnifying power.

((This following approximation is used: I = 333/d where I is the magnifying power and d is the diameter of the sphere in mm.
Therefore, we can work out the magnification of these spheres:
A sphere of 1.66mm in diameter = 200X
A sphere of 3.33mm in diameter = 100X
A sphere of 1.11mm in diameter = 300X))*
* copyright
https://www.open.edu/openlearn/science-maths-technology/science/physics-and-astronomy/physics/challenge-make-microscope

Different models based on:

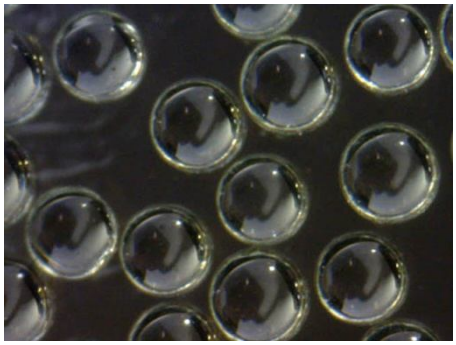
1) Variation in Diameter of Sphere
   a) Precision Spheres (1-13mm) >
   b) Microspheres (10-1000um) >
   c) Fine Microspheres (1-10um)>
   d) Nanospheres (1-1000nm)

While magnification increases down the scale, handling, assembly become challenging and need a full-equipped nanolaboratory.

2) Variation in composition (properties, including refractive indexes of sphere)

Some samples tried/under try

   a) Barium Titanate Solid Glass Microspheres 4.1-4.4g/cc - 5um to 1000um (1mm)



Barium Titanate glass spheres offer a higher Refractive Index (n) than most other glass