WHAT IS CLAIMED IS:

1. A method for manufacturing nanoholes, the method comprising:

a preparing step of preparing a body having a through-hole which passes through two facing surfaces and has a nano- or micro-scale diameter; and

a particle injecting step of injecting particles with a smaller diameter than the through-hole into the through-hole to form nanoholes with a smaller scale than the through-hole, the nanoholes manufactured by pores formed between the particles.

2. The method of claim 1, wherein in the particle injecting step, a plurality of kinds of particles with different sizes are injected into the through-hole.

3. The method of claim 1, wherein in the particle injecting step, the same kind of particles with the same size are injected into the through-hole.

4. The method of claim 1, wherein in the particle injecting step, electrically or chemically treated particles are injected.

5. The method of any one of claims 1 to 4, wherein an inlet, through which the particles are injected in the particle injecting step, and an

outlet, which is opposite to the inlet, are formed in an asymmetric structure so that the particles injected in the particle injecting step do not leave the through-hole.

6. The method of claim 5, wherein in the through-hole, the diameter of the inlet is larger than that of the outlet.

7. The method of any one of claims 1 to 4, wherein an inlet, to which the particles are injected in the particle injecting step, and an outlet, which is opposite to the inlet, are formed in a symmetric structure, and

wherein the method further comprises an outlet reducing step of reducing the diameter of the outlet of the through-hole, between the preparing step and the particle injecting step.

8. A filter comprising:

a filter part having a through-hole which penetrates two facing surfaces and has a nano- or micro-scale diameter; and

particles inserted into the through-hole and having a smaller diameter than the through-hole,

wherein the filter part has nanoholes with a smaller scale than the through-hole by the particles injected into the through-hole.

9. The filter of claim 8, wherein the size of the nanoholes is

controlled by adjusting the size of particles injected into the through-hole.

10. The filter of claim 8, wherein the particles have electrically positive or negative polarity by binding to a functional group.

11. The filter of claim 8, wherein a surface of the particles is positively or negatively charged so that an electrically charged electric double layer is formed on the surface of the particle or a region adjacent to the surface.

12. The filter of any one of claims 8 to 11, wherein in the through-hole, the diameter of an inlet, through which the particles are injected, is larger than that of an outlet, which is opposite to the inlet.

13. The filter of claim 12, wherein the filter part is an anodic aluminum oxide (AAO) membrane.