

14. A particle optical system having a particle-optical apparatus for providing a magnetic field for manipulating charged particles of a beam of charged particles, the particle-optical apparatus comprising:

a magnetic-flux-carrying body made of a material with a high permeability number,

at least one current conductor engaging at least partially around the magnetic-flux-carrying body, and

a temperature-adjusting unit configured for adjusting a temperature of the magnetic-flux-carrying body substantially to a nominal temperature,

wherein the permeability number of the material is temperature-dependent and the nominal temperature is within a temperature range, in which the following applies:

with $c < 3 \cdot 10^{-3} \text{ K}^{-1}$

$$\frac{\mu_{\max} - \mu_{\min}}{\mu_{\max} \cdot \Delta T} = c,$$

wherein

μ_{\max} is a maximum value of the permeability number in the temperature range,

μ_{\min} is a minimum value of the permeability number in the temperature range, and

ΔT is a width of the temperature range.

15. The particle-optical system according to claim 14, wherein a temperature dependency of the material exhibits an extremum in the temperature range.

16. The particle-optical system according to claim 15, wherein the nominal temperature is substantially a temperature at which the temperature dependency exhibits the extremum.

17. The particle-optical system according to claim 14, wherein the temperature-adjusting unit comprises a temperature sensor for detecting the temperature of the magnetic-flux-carrying body.

18. The particle-optical system according to claim 14, wherein the material is a soft-magnetic material.

19. The particle-optical system according to claim 14, wherein the material is a ferrite material.

20. The particle-optical system according to claim 14, wherein the system is a lithography system for transferring a pattern onto a particle-sensitive substrate using at least one writing beam of charged particles.

21. The particle-optical system according to claim 14, wherein the system is a microscopy system for inspecting an object.

* * * * *