itself is rotationally symmetric to the optical axis **17***a*. The coil superimposes a dipole field with the focusing field of the objective lens **19***a* in order to displace the optical axis of a focussing effect of the objective **19***a* away from the optical axis **17***a* such that it coincides with the center of the writing electron beam **33***a* displaced from the optical axis by the deflectors **25***a*, **27***a*. The deflectors **25***a*, **27***a*, and the coil **83** within the lithography system **71** can also be configured as described with reference to **FIGS. 2 and 3**, wherein electrodes (reference number **67** in **FIG. 2**) are not necessarily disposed within the magnetic deflectors and the coil, respectively.

[**0046**] In order for the pattern stored in the memory **73** to be transferred to the surface **3***a* of the wafer **5***a*, the controller **29***a* thus controls the deflectors **25***a*, **27***a* and the coil **83** as well as the laser **79** such that the writing electron beam **33***a* is moved across the surface **3***a* as desired and is switched on and off as required.

[**0047**] The electron microscopy system which has been described with reference to **FIG. 1** images an extended region of the object surface onto a position-sensitive detector, for example, a CCD chip. Such an electron microscopy system is usually referred to as a LEEM (low energy electron microscope) or SEEM (secondary electron emission microscope). However, it is also possible to use the concept on which the invention is based, namely to stabilize a magnetic-flux-carrying material to such a temperature at which the temperature dependence of the permeability number thereof is small or has an extremum, to other types of electron microscopes. An example of this is a SEM (scanning electron microscope).

[**0048**] The lithography system described with reference to **FIG. 5** is a "mask-less" lithography system wherein the writing beam is switched on and off via a beam source. However, it is also possible to realize the concepts of the invention in a lithography system wherein a mask or reticle is used for the definition of the pattern to be transferred.

[**0049**] In the above-described embodiments, the magnetic-flux-carrying body which is stabilized to a correspondingly selected nominal temperature is disposed in a particle-optical apparatus which serves as beam deflector. However, it is also possible to adjust the magnetic-flux-carrying body to a selected temperature in other particle-optical apparatuses. Examples of this are particle-optical apparatuses which act as focusing lenses or correction members, such as a hexapole field generating members or the like.

[**0050**] On the other hand, if a operating temperature of a particle-optical apparatus is predetermined, a ferrite material can be suitably selected. The temperature dependence of a ferrite material is dependent upon a composition thereof. Therefore, it is preferred to use or design a ferrite material which exhibits only slight permeability variations in a temperature range about the operating temperature.

[**0051**] The electron microscopy system described with reference to **FIG. 1** and the lithography system illustrated with reference to **FIG. 5** each operate with one primary electron beam and writing beam, respectively. However, it is also possible to use plural primary beams and writing beams, respectively, in parallel with to each other in such apparatuses.

[**0052**] The present invention has been described by way of exemplary embodiments to which it is not limited. Variations and modification will occur to these skilled in the art which do not depart from the scope of the present invention as recited in the claims appended hereto.

What is claimed:

1. A method of manipulating charged particles of a beam of charged particles by a magnetic field, the method comprising:

providing a magnetic field generating apparatus having a magnetic-flux-carrying body made of a material with a high permeability number, and at least one current conductor engaging at least partially around the magnetic-flux-carrying body, and

operating the magnetic-flux-carrying body at a operating temperature,

wherein the permeability number of the material is temperature dependent, and the material and the operating temperature are chosen such that the operating temperature is within a temperature range, in which the following applies:

with $c<3\cdot10^{-3}K^{-1}$

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

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.

2. The method according to claim 1, wherein c is less than $9\cdot10^{-4}$ K^{-1}.

3. The method according to claim 1, wherein c is less than $3\cdot10^{-4}$ K^{-1}.

4. The method according to claim 1, wherein c is less than $9\cdot10^{-1}$ K^{-1}.

5. The method according to claim 1, wherein c is less than $3\cdot10^{-5}$ K^{-1}.

6. The method according to claim 1, wherein c is less than $9\cdot10^{-6}$ K^{-1}.

7. The method according to claim 1, wherein c is less than $3\cdot10^{-6}$ K^{-1}.

8. The method according to claim 1, wherein c is less than $1\cdot10^{-6}$ K^{-1}.

9. The method according to claim 1, wherein a temperature dependency of the material has an extremum in the temperature range.

10. The method according to claim 9, wherein the operating temperature is substantially a temperature at which the temperature dependency has the extremum.

11. The method according to claim 1, wherein the permeability number of the material is higher than 5,000.

12. The method according to claim 1, wherein the permeability number of the material is higher than 8,000.

13. The method according to claim 1, wherein the permeability number of the material is higher than 10,000.