What is claimed is:

1. A method of creating a plurality of magnetic domains on a magnetically susceptible surface of one or more substrates, comprising:

forming a patterned mask over at least a portion of the magnetically susceptible surface to form a masked portion and an unmasked portion of the surface; and

modifying the magnetic characteristics of the unmasked portion of the magnetically susceptible surface by exposing the surface to directed particles having average energy between about 0.2 keV and 4.8 keV.

2. The method of claim 1, wherein the directed particles comprise one or more elements, simultaneously or in sequence, selected from the group consisting of helium, hydrogen, oxygen, nitrogen, boron, fluorine, argon, silicon, platinum, aluminum, phosphorus, neon, and carbon.

3. The method of claim 1, wherein modifying the magnetic characteristics of the unmasked portion comprises:

disposing the one or more substrates on a support in an ion implant chamber;

generating a beam of energetic particles;

directing the beam of energetic particles toward successive locations on the one or more substrates; and

implanting the energetic particles the substrate surface.

4. The method of claim 3, wherein generating the beam of energetic particles comprises generating a beam of ions and neutralizing the beam of ions.

5. A method of forming a magnetic medium, comprising:

forming a magnetic layer on a substrate;

forming a mask over the magnetic layer to form a masked portion and an unmasked portion of the magnetic layer;

modifying the magnetic properties of the unmasked portion by exposing the unmasked portion to an ion beam, wherein the ions have average energy between about 0.2 keV and about 4.8 keV; and

removing the mask.

6. The method of claim 5, further comprising cooling the substrate while exposing the unmasked portion to an ion beam.

7. The method of claim 5, wherein two or more substrates are exposed to the ion beam in one treatment.

8. The method of claim 5, wherein modifying the magnetic properties of the umnasked portion comprises substantially demagnetizing the unmasked portion.

9. A method of forming a magnetic medium, comprising:

forming a magnetic layer on at least two major surfaces of a substrate;

forming a patterned mask over the magnetic layer on the at least two major surfaces of the substrate to form a masked portion and an unmasked portion of the magnetic layer; and

modifying the magnetic properties of the unmasked portion of the at least two major surfaces of the substrate by exposing the unmasked portion to a particle beam.

10. The method of claim 9, wherein a plurality of substrates is processed concurrently in one chamber.

11. The method of claim 10, wherein two major surfaces of each substrate are exposed to a processing environment sequentially.

12. An apparatus for processing a substrate, comprising:

a process chamber;

a substrate support comprising a plurality of substrate sites in the process chamber; and

an ion beam generator opposite the substrate support.

13. The apparatus of claim 12, further comprising an ion neutralizer in the process chamber between the ion beam generator and the substrate support.

14. A magnetic media device, comprising:

a magnetically active layer comprising cobalt;

a first plurality of domains within the magnetically active layer, the first plurality of domains comprising a dopant selected from the group consisting of boron, nitrogen, hydrogen, oxygen, carbon, phosphorus, arsenic, fluorine, silicon, and germanium; and

a second plurality of undoped domains within the magnetically active layer, wherein each domain of the first and second pluralities of domains has a dimension not more than 50 nm, a magnetic property of the first plurality of domains has a first average value, and the magnetic property of the second plurality of domains has a second average value measurably different from the first average value.

15. The magnetic media device of claim 14, wherein the domains of the first plurality are all separated by a domain of the second plurality.

What is claimed is:

1. A magnetic media device, comprising:

a magnetically active layer comprising cobalt;

a first plurality of domains within the magnetically active layer, the first plurality of domains comprising a dopant selected from the group consisting of boron, nitrogen, hydrogen, oxygen, carbon, phosphorus, arsenic, fluorine, silicon, and germanium; and

a second plurality of undoped domains within the magnetically active layer, wherein each domain of the first and second pluralities of domains has a dimension not more than 50 nm, a magnetic property of the first plurality of domains has a first average value, and the magnetic property of the second plurality of domains has a second average value measurably different from the first average value, wherein the domains of the first plurality are all separated by a domain of the second plurality.