The invention claimed is:

1. A method of patterning a substrate, comprising:

forming a protective layer on a magnetically active surface of the substrate;

forming a metal nitride film on the protective layer by a PVD process at a temperature less than about 200° C.;

forming a patterning film over the metal nitride film;

physically imprinting the patterning film to form a pattern;

forming a pattern negative layer over the patterning film;

removing a portion of the pattern negative layer;

removing a portion of the patterning film;

patterning the metal nitride film to form protected domains of the magnetically active surface separated by unprotected domains of the magnetically active surface;

altering a magnetic property of the unprotected domains of the magnetically active surface by treating the substrate with a plasma; and

removing the metal nitride film to form a surface of the substrate having a pattern of magnetic properties.

2. The method of claim **1**, wherein the protective layer comprises carbon.

3. The method of claim **1**, wherein the metal of the metal nitride film comprises one or more metals from the group consisting of titanium, aluminum, tantalum, and tungsten.

4. The method of claim **1**, wherein the metal nitride film is a titanium nitride film.

5. The method of claim **1**, wherein the removing a portion of the pattern negative layer comprises etching the pattern negative layer using halogen chemistry.

6. The method of claim **1**, wherein removing a portion of the patterning film comprises applying an oxygen plasma to the substrate.

7. The method of claim **1**, wherein the patterning the metal nitride film comprises immersing the substrate in an in-situ plasma and applying RF bias to the substrate.

8. The method of claim **1**, wherein the patterning the metal nitride film comprises exposing the substrate to a remote plasma.

9. The method of claim **8**, wherein the exposing the substrate to a remote plasma comprises overetching the substrate.

10. The method of claim **8**, wherein the patterning the metal nitride film further comprises etching with a gas mixture comprising HBr, Cl_2 and O_2.

11. The method of claim **8**, wherein the patterning the metal nitride film further comprises etching with a gas mixture comprising CF_4, Cl_2 and O_2.

12. The method of claim **1**, further comprising:

after the patterning the metal nitride film and before treating the substrate with a plasma, forming a protective overcoat over the patterned metal nitride film.

13. The method of claim **12**, wherein the protective overcoat comprises tungsten.

14. The method of claim **12**, wherein the protective overcoat is formed by a physical vapor deposition process.

15. The method of claim **1**, wherein the treating the substrate with a plasma comprises immersing the substrate in the plasma.

16. The method of claim **15**, wherein the treating the substrate with a plasma further comprises biasing the substrate.

17. The method of claim **1**, wherein the removing the metal nitride film comprises a wet strip process.

18. The method of claim **17**, wherein the wet strip process comprises applying a solution of tetramethylammonium hydroxide and hydrogen peroxide in water to the substrate.

19. The method of claim **17**, wherein the wet strip process is performed at a temperature below about 100° C.

20. A method of patterning a substrate, comprising:

forming a protective layer comprising carbon on a magnetically active surface of the substrate;

forming a titanium nitride film on the protective layer by a PVD process at a temperature less than about 200° C.;

forming a patterning film over the titanium nitride film;

physically imprinting the patterning film to form a pattern;

forming a pattern negative layer over the patterning film;

etching the pattern negative layer using halogen chemistry;

removing a portion of the patterning film by applying an oxygen plasma to the substrate;

patterning the titanium nitride film by exposing the substrate to a remote plasma comprising Cl_2 and O_2 to form protected domains of the magnetically active surface separated by unprotected domains of the magnetically active surface;

forming a protective overcoat over the patterned metal nitride film, wherein the protective overcoat comprises tungsten;

altering a magnetic property of the unprotected domains of the magnetically active surface by immersing the substrate in a plasma and applying RF bias to the substrate; and

removing the titanium nitride film to form a surface of the substrate having a pattern of magnetic properties.