CLAIMS:

1. A method for fabricating multi-tiered, multi-graded imprint lithography templates, the method comprising:

depositing a first profiled polymer layer onto a patterned multi-tiered primary material, wherein said patterned multi-tiered primary material comprises a hard mask on a top surface;

etching said first profiled polymer layer and said patterned multi-tiered primary material thereby forming a graded depth in a lower tier of said multi-tiered primary material;

selectively removing said etched first profiled polymer layer thereby forming an intermediate multi-tiered multi-graded primary material;

selectively stripping said hard mask from a top surface of said intermediate multi-tiered multi-graded primary material to create a hard mask free intermediate multi-tiered multi-graded primary material;

depositing a second profiled polymer layer onto said hard mask free intermediate multitiered multi-graded primary material;

etching said second profiled polymer layer and said patterned multi-tiered primary material thereby forming a profiled surface comprising regions of said second profiled polymer and regions of said patterned multi-tiered primary material, wherein a top tier of said multi-tiered primary material has been etched along with said second profiled polymer layer; and

selectively removing said etched second profiled polymer layer thereby forming a final patterned multi-tiered multi-graded primary material.

2. The method as recited in claim 1, wherein said patterned multi-tiered primary material is made from silicon dioxide.

3. The method as recited in claim 1, wherein said hard mask comprise one or more of the following: Cr, CrO, CrON, MoSiO, MoSiON, CrF, SiN, CrN, CrOCN, SiCrO, WSi and ZrSiO.

4. The method as recited in claim 1, wherein said deposition of said first profiled polymer layer is performed via slot die coating, inkjet dispensing, gravure coating or a combination of said slot die coating, inkjet dispensing and gravure coating.

5. The method as recited in claim 1, wherein said deposition of said second profiled polymer layer is performed via slot die coating, inkjet dispensing, gravure coating or a combination of said slot die coating, inkjet dispensing and gravure coating.

6. The method as recited in claim 1, wherein said etching is reactive ion etching.

7. The method as recited in claim 1, wherein said selective removal of said first profiled polymer layer and said second profiled polymer layer is performed via O2 plasma ashing.

8. A method for fabricating multi-tiered, multi-graded imprint lithography templates, the method comprising:

depositing a first profiled polymer layer onto a patterned multi-tiered primary material;

etching said first profiled polymer layer and said patterned multi-tiered primary material thereby forming a composite profiled surface comprising regions of said first profiled polymer layer and regions of said patterned multi-tiered primary material, wherein a top tier of said multi-tiered primary material has been etched along with said first profiled polymer layer;

selectively depositing a hard mask cap on to said regions of said patterned multi-tiered primary material on said composite profiled surface;

selectively removing said etched first profiled polymer layer thereby forming an intermediate multi-tiered multi-graded primary material;

depositing a second profiled polymer layer onto said intermediate multi-tiered multi-graded primary material;

etching said second profiled polymer layer and said patterned multi-tiered primary material thereby forming a graded depth in a lower tier of said multi-tiered primary material; and

selectively removing said etched second profiled polymer layer thereby forming a patterned multi-tiered multi-graded primary material with a hard mask.

9. The method as recited in claim 8, wherein said patterned multi-tiered primary material is made from silicon dioxide.

10. The method as recited in claim 8, wherein said selectively deposited hard mask comprises one of the following: TiOx, Pt and Pd.

11. The method as recited in claim 8, wherein said selective deposition of hard mask cap is performed via selective atomic layer deposition.

12. The method as recited in claim 8, wherein said deposition of said first profiled polymer layer is performed via slot die coating, inkjet dispensing, gravure coating, vacuum deposition or a combination of said slot die coating, said inkjet dispensing, said gravure coating, and said vacuum deposition.

13. The method as recited in claim 8, wherein said deposition of said second profiled polymer layer is performed via slot die coating, inkjet dispensing, gravure coating, vacuum deposition or a combination of said slot die coating, said inkjet dispensing, said gravure coating, and said vacuum deposition.

14. The method as recited in claim 8, wherein said etching is reactive ion etching.

15. The method as recited in claim 8, wherein said selective removal of said first profiled polymer layer and said second profiled polymer layer is performed via O2 plasma ashing.

16. A method for fabricating functional optical components, the method comprising:

depositing a detackable adhesive layer on an intermediate substrate;

depositing a curable liquid onto said detackable adhesive layer on said intermediate substrate;

using an imprint template to transfer patterns onto said curable liquid followed by curing thereby forming an imprinted patterned material on said intermediate substrate;

depositing a layer of functional material on said imprinted patterned material;

depositing a polymer layer on top of said functional material layer;

performing a correlated etch of said polymer layer and said functional material layer thereby forming an etched functional material surface;

bonding said etched functional material surface to a final substrate; and

detacking said imprinted patterned material from said intermediate substrate at said detackable adhesive layer.

17. The method as recited in claim 16, wherein said imprinted patterned material is eliminated selectively using O2 plasma ashing resulting in a patterned functional material on said final substrate.

18. The method as recited in claim 16, wherein said imprint template has patterns comprised of UV crosslinked organic polymer.

19. The method as recited in claim 18, wherein said patterns have an encapsulation layer of inorganic material.

20. The method as recited in claim 18, wherein said patterns are multi-tiered or multi-graded or both.