4. The composition of claim 3, wherein the composition is in the form $Ca_{1-x-y}Sr_xMg_yF_2$.

5. The composition of claim 1, wherein said selected wavelength is between 193 to 157 nm.

6. A composition comprising a mixture of CaF_2 crystal and a second alkaline earth fluoride having spatial dispersion induced birefringence opposite to the birefringence of the CaF_2 crystal the CaF_2 crystal and the second crystal being present in amounts such that composition has minimal spatial dispersion induced birefringence at a selected wavelength within the UV range, said composition further comprising Sr, said second crystal comprising Ba, and said composition being in the form of $Ca_{1-x-y}Sr_xBa_yF_2$.

7. A method of making non-birefringent material comprising the steps of:

a) selecting a wavelength, and

b) mixing CaF_2 crystal with a second alkaline earth fluoride having spatial dispersion induced birefringence opposite to the birefringence of the CaF_2 crystal and the CaF_2 crystal and the second crystal being present in amounts such as to form a composition having minimized spatial dispersion induced birefringence at the selected wavelength, said second crystal comprising BaF_2.

8. The method of claim 7, wherein the wavelength is selected within the UV range.

9. The method of claim 7, wherein said mixing CaF_2 crystal with a second crystal comprises mixing CaF_2 with Ba to form the composition $Ca_{1-x}Ba_xF_2$ and selecting a value for x to minimize the spatial dispersion induced birefringence at the selected wavelength.

10. A method of making non-birefringent material comprising the steps of:

a) selecting a wavelength, and

b) mixing CaF_2 crystal with a second crystal to form a composition having minimized spatial dispersion induced birefringence at the selected wavelength,

wherein the second crystal is SrF_2 and said mixing CaF_2 crystal with a second crystal comprises mixing CaF_2 with SrF_2 to form the composition $Ca_{1-x}Sr_xF_2$ and selecting a value for x to minimize the spatial dispersion induced birefringence at the selected wavelength.

11. The method of claim 7, wherein said mixing CaF_2 crystal with a second crystal further comprises mixing CaF_2 with the BaF_2 and SrF_2 to form the composition $Ca_{1-x-y}Sr_xBa_yF_2$ and selecting values for x and y to minimize the spatial dispersion induced birefringence at the selected wavelength.

12. The method of claim 7, wherein said mixing CaF2 crystal with a second crystal further comprises mixing CaF_2 with Ba and Mg to form the composition $Ca_{1-x-y}Ba_xMg_yF_2$ and selecting values for x and y to minimize the spatial dispersion induced birefringence at the selected wavelength.

13. A method of making non-birefringent material comprising the steps of:

a) selecting a wavelength, and

b) mixing CaF_2 crystal with a second crystal to form a composition having minimized spatial dispersion induced birefringence at the selected wavelength

wherein the second crystal comprises SrF_2 and said mixing CaF_2 crystal with a second crystal further comprises mixing CaF_2 with Sr and Mg to form the composition $Ca_{1-x-y}Sr_xMg_yF_2$ and selecting values for x and y to minimize the spatial dispersion induced birefringence at the selected wavelength.

14. The method of claim 7, wherein said wavelength is between 157 to 193 nm.

15. A device comprising:

an optical element formed from at least one composition comprising a mixture of CaF_2 crystal and at least one additional crystal, said composition selected from the group consisting of $Ca_{1-x-y}Sr_xBa_yF_2$, $Ca_{1-x-y}Sr_xMg_yF_2$, and $Ca_{1-x-y}Ba_xMg_yF_2$, where x and y having values selected so as to form the composition with minimized intrinsic birefringence.

16. The device of claim 15, wherein the optical element comprises at least two compositions selected from the group consisting of $Ca_{1-x-y}Sr_xBa_yF_2$, $Ca_{1-x-y}Sr_xMg_yF_2$, and $Ca_{1-x-y}Ba_xMg_yF_2$ with x and y have values to minimize or eliminate chromatic aberrations when electromagnetic energy interacts with said composition.

17. A device comprising:

an optical element formed from at least one composition selected from the group consisting of $Ca_{1-x-y}Sr_xMg_yF_2$, and $Ca_{1-x-y}Ba_xMg_yF_2$, where x and y are values selected such that the composition has minimized intrinsic birefringence.

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