What is claimed is:

1. A resin composition, comprising:

an epoxy resin matrix;

a free radical photoinitiator selected from the group consisting of 2-ethyl-9,10-dimethoxyanthracene, 2,2-dimethoxy-2-phenylacetophenone, 2-ethoxy-2-phenylacetophenone, and a phosphine oxide; and

a photoacid generator which reacts with a free radical generated from the free radical photoinitiator to generate a superacid;

wherein, when cured, the resin composition has low or no autofluorescence when exposed to blue excitation wavelengths ranging from 380 nm to 480 nm or green excitation wavelengths ranging from 510 nm to 560 nm,

wherein the low autofluorescence corresponds with a grey value of less than 25,000 when the cured resin composition is exposed to the blue excitation wavelengths using TYPHOON® FLA700,

wherein the low autofluorescence corresponds with a grey value of less than 10,000 when the cured resin composition is exposed to the green excitation wavelengths using TYPHOON® FLA700,

wherein the epoxy resin matrix comprises an epoxy material selected from the group consisting of an epoxy functionalized polyhedral oligomeric silsesquioxane; tetrakis(epoxycyclohexyl ethyl)tetramethyl cyclotetrasiloxane; a copolymer of (epoxycyclohexylethyl)methylsiloxane and dimethylsiloxane; 1,3-bis[2-(3,4-epoxycyclohexyl) ethyl] tetramethyl disiloxane; 1,3-bis(glycidoxypropyl)tetramethyl disiloxane; and combinations thereof or wherein the epoxy resin matrix includes a combination of two epoxy functionalized polyhedral oligomeric silsesquioxanes, and wherein the combination of the two epoxy functionalized polyhedral oligomeric silsesquioxanes includes glycidyl functionalized polyhedral oligomeric silsesquioxane and epoxycyclohexyl ethyl functionalized polyhedral oligomeric silsesquioxane,

wherein the photoacid generator is selected from the group consisting of N-hydroxynaphthalimide triflate; triarylsulfonium hexafluorophosphate salts, mixed; triarylsulfonium hexafluoroantimonate salts, mixed; 1-naphthyl diphenylsulfonium triflate; 4-phenylthiophenyl)diphenylsulfonium triflate; bis-(4-methylphenyl)iodonium

hexafluorophosphate; bis(4-tert-butylphenyl)iodonium hexafluorophosphate; (2-methylphenyl)(2,4,6-trimethylphenyl)iodonium triflate; bis(2,4,6-trimethylphenyl)iodonium triflate; bis-(4-dedecylphenyl)iodonium hexafluoroantimonate salt; and combinations thereof.

2. The resin composition as defined in claim 1, wherein the cured resin composition has low autofluorescence, and wherein the low autofluorescence corresponds with a grey value of less than 5,000 when the cured resin composition is exposed to the blue excitation wavelengths using TYPHOON® FLA700.

3. The resin composition as defined in claim 1, wherein the cured resin composition has low autofluorescence, and wherein the low autofluorescence corresponds with a grey value of less than 2,500 when the cured resin composition is exposed to the green excitation wavelengths using TYPHOON® FLA700.

4. The resin composition as defined in claim 1, wherein the free radical photoinitiator is the phosphine oxide, and wherein the phosphine oxide is selected from the group consisting of diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide; a blend of diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide and 2-hydroxy-2-ethylpropiophenone; phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide; ethyl(2,4,6-trimethylbenzoyl)phenylphosphinate; and combinations thereof.

5. The resin composition as defined in claim 1, further comprising a dark quencher or an electron acceptor.

6. The resin composition as defined in claim 1, wherein the free radical photoinitiator and the photoacid generator together are present in an amount ranging from 1 wt% to 10 wt%.

7. The resin composition as defined in claim 1, further comprising a polyacrylate and propylene glycol monomethylether acetate.

8. The resin composition as defined in claim 1, wherein the epoxy resin matrix further includes a free radical curable resin component including an acrylate and a siloxane.

9. A flow cell, comprising:

a substrate; and

a cured, patterned resin on the substrate, the cured, patterned resin including depressions separated by interstitial regions, and the cured, patterned resin having been formed from a resin composition including:

an epoxy resin matrix;

a free radical photoinitiator selected from the group consisting of 2-ethyl-9,10-dimethoxyanthracene, 2,2-dimethoxy-2-phenylacetophenone, 2-ethoxy-2-phenylacetophenone, and a phosphine oxide; and

a photoacid generator which reacts a free radical generated from the free radical photoinitiator to generate a superacid;

wherein the cured, patterned resin has low or no autofluorescence when exposed to blue excitation wavelengths ranging from 380 nm to 480 nm or green excitation wavelengths ranging from 510 nm to 560 nm,

wherein the low autofluorescence corresponds with a grey value of less than 25,000 when the cured resin composition is exposed to the blue excitation wavelengths using TYPHOON® FLA700,

wherein the low autofluorescence corresponds with a grey value of less than 10,000 when the cured resin composition is exposed to the green excitation wavelengths using TYPHOON® FLA700,

wherein the epoxy resin matrix comprises an epoxy material selected from the group consisting of an epoxy functionalized polyhedral oligomeric silsesquioxane; tetrakis(epoxycyclohexyl ethyl)tetramethyl cyclotetrasiloxane; a copolymer of (epoxycyclohexylethyl)methylsiloxane and dimethylsiloxane; 1,3-bis[2-(3,4-epoxycyclohexyl) ethyl] tetramethyl disiloxane; 1,3-bis(glycidoxypropyl)tetramethyl disiloxane; and combinations thereof or wherein the epoxy resin matrix includes a

combination of two epoxy functionalized polyhedral oligomeric silsesquioxanes, and wherein the combination of the two epoxy functionalized polyhedral oligomeric silsesquioxanes includes glycidyl functionalized polyhedral oligomeric silsesquioxane and epoxycyclohexyl ethyl functionalized polyhedral oligomeric silsesquioxane, and

wherein the photoacid generator is selected from the group consisting of N-hydroxynaphthalimide triflate; triarylsulfonium hexafluorophosphate salts, mixed; triarylsulfonium hexafluoroantimonate salts, mixed; 1-naphthyl diphenylsulfonium triflate; 4-phenylthiophenyl)diphenylsulfonium triflate; bis-(4-methylphenyl)iodonium hexafluorophosphate; bis(4-tert-butylphenyl)iodonium hexafluorophosphate; (2-methylphenyl)(2,4,6-trimethylphenyl)iodonium triflate; bis(2,4,6-trimethylphenyl)iodonium triflate; bis-(4-dedecylphenyl)iodonium hexafluoroantimonate salt; and combinations thereof.

10. The flow cell as defined in claim 9, further comprising:

a polymer coating in the depressions; and

a primer grafted to the polymer coating.

11. The flow cell as defined in claim 9, wherein the cured, patterned resin has low autofluorescence, and wherein the low autofluorescence corresponds with a grey value of less than 5,000 when the cured resin composition is exposed to the blue excitation wavelengths using TYPHOON® FLA700.

12. The flow cell as defined in claim 9, wherein the cured, patterned resin has low autofluorescence, and wherein the low autofluorescence corresponds with a grey value of less than 2,500 when the cured resin composition is exposed to the green excitation wavelengths using TYPHOON® FLA700.

13. The flow cell as defined in claim 9, wherein the free radical photoinitiator is the phosphine oxide, and wherein the phosphine oxide is selected from the group consisting of diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide; a blend of diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide and 2-hydroxy-2-

methylpropiophenone; phenylbis(2,4,6-trimethylbenzoyl)phosphine oxide; ethyl(2,4,6-trimethylbenzoyl)phenylphosphinate; and combinations thereof.

14. A method of making a flow cell, comprising:

depositing a resin composition on a substrate, the resin composition including:

an epoxy resin matrix;

a free radical photoinitiator selected from the group consisting of 2-ethyl-9,10-dimethoxyanthracene, 2,2-dimethoxy-2-phenylacetophenone, 2-ethoxy-2-phenylacetophenone, and a phosphine oxide; and

a photoacid generator which reacts with a free radical generated from the free radical photoinitiator to generate a superacid;

nanoimprinting the deposited resin composition using a working stamp; and

curing the deposited resin composition to form a cured, patterned resin;

wherein the cured, patterned resin has low or no autofluorescence when exposed to blue excitation wavelengths ranging from 380 nm to 480 nm or green excitation wavelengths ranging from 510 nm to 560 nm,

wherein the low autofluorescence corresponds with a grey value of less than 25,000 when the cured resin composition is exposed to the blue excitation wavelengths using TYPHOON® FLA700,

wherein the low autofluorescence corresponds with a grey value of less than 10,000 when the cured resin composition is exposed to the green excitation wavelengths using TYPHOON® FLA700,

wherein the epoxy resin matrix comprises an epoxy material selected from the group consisting of an epoxy functionalized polyhedral oligomeric silsesquioxane; tetrakis(epoxycyclohexyl ethyl)tetramethyl cyclotetrasiloxane; a copolymer of (epoxycyclohexylethyl)methylsiloxane and dimethylsiloxane; 1,3-bis[2-(3,4-epoxycyclohexyl) ethyl] tetramethyl disiloxane; 1,3-bis(glycidoxypropyl)tetramethyl disiloxane; and combinations thereof, or wherein the epoxy resin matrix includes a combination of two epoxy functionalized polyhedral oligomeric silsesquioxanes, and wherein the combination of the two epoxy functionalized polyhedral oligomeric

silsesquioxanes includes glycidyl functionalized polyhedral oligomeric silsesquioxane and epoxycyclohexyl ethyl functionalized polyhedral oligomeric silsesquioxane, and

wherein the photoacid generator is selected from the group consisting of N-hydroxynaphthalimide triflate; triarylsulfonium hexafluorophosphate salts, mixed; triarylsulfonium hexafluoroantimonate salts, mixed; 1-naphthyl diphenylsulfonium triflate; 4-phenylthiophenyl)diphenylsulfonium triflate; bis-(4-methylphenyl)iodonium hexafluorophosphate; bis(4-tert-butylphenyl)iodonium hexafluorophosphate; (2-methylphenyl)(2,4,6-trimethylphenyl)iodonium triflate; bis(2,4,6-trimethylphenyl)iodonium triflate; bis-(4-dedecylphenyl)iodonium hexafluoroantimonate salt; and combinations thereof.