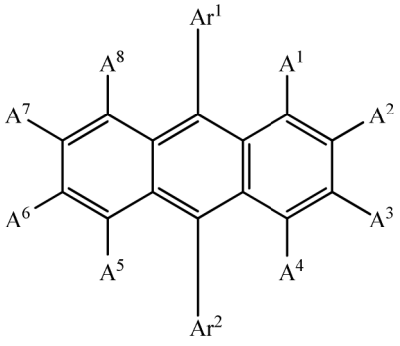
CLAIMS

What is claimed is:

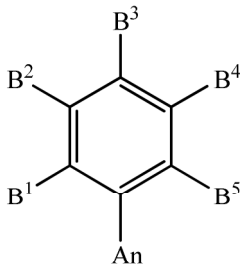
Claim 1. An anthracene compound represented by Formula (1):



(1)

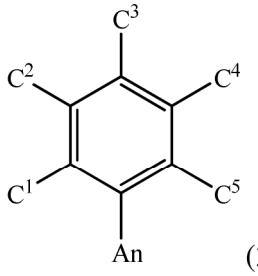
<u>wherein Ar^1 and Ar^2 are different from each other;</u>

wherein Ar^1 has a structure represented by Formula 2, where An shows the attachment to the anthracene ring as described in Formula 1,

$Ar^1 =$ 

(2)

wherein Ar^2 has a structure represented by Formula 3, where An shows the attachment to the anthracene ring as described in Formula 1,

$Ar^2 =$ 

(3)

wherein each of A^1, A^2, A^3, A^4, A^5, A^6, A^7, and A^8 are selected from the group consisting of hydrogen and fluorine;

wherein at least two of the substituents, B^1, B^2, B^3, B^4, and B^5, as shown in Formula 2, are not hydrogen, wherein each of B^1, B^2, B^4, and B^5 are selected from the group consisting of hydrogen and fluorine, and B^3 is selected from the group consisting of hydrogen, fluorine, trifluoromethyl, and an alkoxy group with 1-10 carbons; and

wherein at least two of the substituents, C^1, C^2, C^3, C^4, and C^5, as shown in Formula 3, are not hydrogen, wherein each of C^1, C^2, C^4, and C^5 are selected from the group consisting of hydrogen and fluorine, and C^3 is selected from the group consisting of hydrogen, fluorine, trifluoromethyl, and an alkoxy group with 1-10 carbons.

~~Claim 2. The anthracene compound of claim 1 wherein:~~

~~Ar^1 and Ar^2 are different from each other; and~~

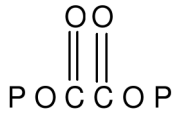
~~wherein each of C^1, C^2, C^3, C^4, and C^5 are selected from the group consisting of hydrogen, fluorine, trifluoromethyl, and an alkoxy group with 1-10 carbons.~~

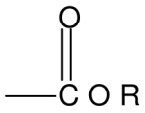
Claim ~~3~~2. A chemiluminescent composition containing the anthracene compound of claim 1, which composition is adapted to be reacted with a hydrogen peroxide solution to provide chemiluminescent light.

Claim 4~~3~~. The chemiluminescent composition as set forth in claim ~~3~~2, further comprising a solvent.

Claim ~~5~~4. The chemiluminescent composition as set forth in claim ~~4~~3, wherein the solvent is selected from the group consisting of -dibutyl phthalate, butyl benzoate, propylene glycol dibenzoate, ethylhexyl diphenyl phosphate and mixtures comprising at least one of the foregoing.

Claim ~~6~~5. The chemiluminescent composition as set forth in claim ~~3~~2, containing an oxalate compound which is a bis(phenyl) oxalate ester having the formula:



in which the phenyl groups(P) are substituted by at least one carbalkoxy group of the formula 

in which R is (a) an alkyl group (1-18 carbons, straight chain, branched chain, or cyclic) or (b) a substituted alkyl group, where said substituents are selected from the group consisting of fluoro, chloro, trifluoromethyl, alkoxy, cyano, carbalkoxy, and phenyl; and in which ~~(2)~~ the phenyl groups (P)~~,~~ are substituted by at least two additional substituents selected from the group consisting of fluoro, chloro, bromo, cyano, trifluoromethyl, carbalkoxy, nitro, alkoxy, alkoxy methyl, methyl, and higher alkyl, said additional substituents being selected so that the sum of their Hammett sigma constants for phenols lies between 1.0 and 2.

Claim ~~7~~6. The chemiluminescent composition as set forth in claim ~~6~~ 5 wherein the oxalate is -bis(2,4,5-trichloro-6-carbopentoxyphenyl)oxalate.

Claim ~~8~~7. A chemiluminescent system comprising the chemiluminescent composition of claim ~~3~~2, in combination with a peroxide-containing component, whereby a blue/violet chemiluminescent light having an emission maximum from about 390 nm to less than 438 nm is produced.

Claim ~~9~~8. The chemiluminescent system of claim ~~8~~ 7 wherein a blue/violet light having an emission maximum in the region from about ~~4~~00 nm to about 420 nm is produced.

Claim ~~10~~9. ~~-~~The chemiluminescent system as set forth in claim ~~8~~7, wherein the peroxide-containing component contains a solvent selected from the group consisting of tertiary alcohols, triethyl citrate, dimethyl phthalate, and mixtures comprising at least one of the foregoing.

Claim ~~11~~10. ~~-~~The chemiluminescent system as set forth in claim ~~8~~7, wherein the peroxide-containing component further contains a catalyst.

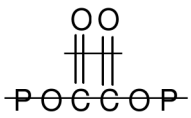
Claim ~~12~~11. The chemiluminescent system as set forth in claim ~~11~~10, wherein the catalyst is a salicylate.

~~Claim 13. A chemiluminescent composition containing the anthracene compound of claim 2, which composition is adapted to be reacted with a hydrogen peroxide solution to provide chemiluminescent light.~~

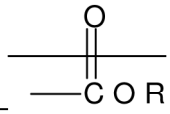
~~Claim 14. The chemiluminescent composition as set forth in claim 13, further comprising a solvent.~~

~~Claim 15. The chemiluminescent composition as set forth in claim 14, wherein the solvent is selected from the group consisting of dibutyl phthalate, butyl benzoate, propylene glycol dibenzoate, ethylhexyl diphenyl phosphate and mixtures comprising at least one of the foregoing.~~

~~Claim 16. The chemiluminescent composition as set forth in claim 13, containing an oxalate compound which is a bis(phenyl) oxalate ester having the formula:~~



~~in which the phenyl groups(P) are substituted by at least one carbalkoxy group of the~~

~~formula~~ 

~~in which R is (a) an alkyl group (1-18 carbons, straight chain, branched chain, cyclic) or (b) a substituted alkyl group, where said substituents are selected from the group consisting of fluoro, chloro, trifluoromethyl, alkoxy, cyano, carbalkoxy, and phenyl; and in which (2) the phenyl groups P, are substituted by at least two additional substituents selected from the group consisting of fluoro, chloro, bromo, cyano, trifluoromethyl, carbalkoxy, nitro, alkoxy, alkoxy methyl, methyl, and higher alkyl, said additional substituents being selected so that the sum of their Hammett sigma constants for phenols lies between 1.0 and 2.~~

~~Claim 17. The chemiluminescent composition as set forth in claim 16 wherein the oxalate is bis(2,4,5-trichloro-6-carbopentoxyphenyl)oxalate.~~

~~Claim 18. A chemiluminescent system comprising the chemiluminescent composition of claim 13, in combination with a peroxide-containing component, whereby a blue/violet chemiluminescent light having an emission maximum from about 390nm to less than 438 nm is produced.~~

~~Claim 19. The chemiluminescent system of claim 18 wherein a blue/violet light having an emission maximum in the region from about 400nm to about 420 nm is produced.~~

~~Claim 20. The chemiluminescent system as set forth in claim 18, wherein the peroxide-containing component contains a solvent selected from the group consisting of tertiary alcohols, triethyl citrate, dimethyl phthalate, and mixtures comprising at least one of the foregoing.~~

~~Claim 21. The chemiluminescent system as set forth in claim 18, wherein the peroxide-containing component further contains a catalyst.~~

~~Claim 22. The chemiluminescent system as set forth in claim 21, wherein the catalyst is a salicylate.~~