

Publication List

Paper and book

87. K.-H. Hong, H.-J. Kim,* "Mitochondria targeting protonophore for tumor diagnostics and therapy", 2019, manuscript in preparation.
86. Park, J. H.; Lee, A-Y.; Hong, K.-H.; Kim, H.-J. * "Chloroindocyanine-based nearinfrared probe for the selective detection of GSH through the aggregation-induced homo FRET effect", 2016, manuscript in preparation.
85. S.-Y. Na, H.-J. Kim,* " β -Galactodisase probe", 2019, manuscript in preparation.
84. S. Park, K.-H. Hong, H.-R. Kim, C. Kang,* H.-J. Kim,* "Moleuclar quartet performance of mitochondria-targeting near-infrared fluorescent probe", 2019, submitted.
83. S.-Y. Lim, D. I. Kim, S. M. Bae, S.-Y. Kim, H.-J. Ha,* H. Kwon, S.-J. Myung,* H.-J. Kim,* "Versatile cyanine probe as a privileged NIR probe for tumor imaging", submitted.
82. Jae-Hyuk Do,[†] Won Joo Lee,[†] Jik Chin,* Hae-Jo Kim,* "A green and sustainable organic catalyst based on dimethylaminopyridinium iodide for the efficient utilization of atmospheric carbon dioxide through the nucleophilic activation of CO₂", *J. Am. Chem. Soc.* **2018**, submitted.
81. Hyun-Seok Seo, Seokan Park, Sisli Hatice Burcu, Hyockman Kwon, Hae-Jo Kim,* "A fused oxazolidine-based dual optical probe for nitroreductase detection with unique chromogenic and fluorogenic properties", *Anal. Chem.* **2018**, submitted..
80. Won Joo Lee, Hae-Jo Kim,* "A bioinspired dual organic catalyst based on thiazolinium iodide for the efficient utilization of atmospheric carbon dioxide", *Green Chem.* **2018**, submitted.
79. Seokan Park,[†] Won Joo Lee,[†] Dong Jun Bae, Sang-Yeob Kim,* Hae-Jo Kim,* "A Ratiometric Near IR Probe Based on Glucosylated Heptamethinylcyanine for *In Vivo* Imaging of Nitroreductase", *J. Am. Chem. Soc.* **2018**, submitted.

< 2019 >

78. Hyun-Seok Seo, Hae-Jo Kim,* "Guanidinium-based organocatalyst for CO₂ utilization under mild conditions", *Bull. Kor. Chem. Soc.* **2019**, *40*, 169-172.
77. Sang-Yun Na, Seokan Park, Sang-Yeob Kim,* Hae-Jo Kim,* "A benzothiazole-based water soluble and pH-independent probe for nitroreductase with a dramatic change of chromogenic and fluorogenic properties", *Dyes Pigmen.* **2019**, *161*, 247-251.
76. Junji Zhang, Xianzhi Chai, Xiao-Peng He,* Hae-Jo Kim,* Juyoung Yoon,* He Tian,* "Fluorogenic probes for disease-relevant enzymes", *Chem. Soc. Rev.* **2019**, *48*, 683-722.

Patent

2019-1. 김해조, 이원주, 서현석, 도재혁, "광활성 형광체 화합물, 상기 광활성 형광체 화합물을 포함하는 조성물 및 이들의 제조 방법", 2019.01.04, 한국외국어대학교, 출원번호: 10-2019-0001383.

< 2018 >

75. J. Chin,* H.-J. Kim,* "Near-infrared fluorescent probes for peptidases", *Coord. Chem. Rev.* **2018**, *354*, 169-181.

Patent

2018-1. 김해조, 이원주, 박석안, "나이트로기 환원 효소 검출용 근적외선 조성물 및 검출방법", 2018.11.16, 한국외국어대학교, 출원번호: 10-2018-0141227.

2018-2. 김해조, 김상엽, 이원주, 박석안, "나이트로기 환원 효소 검출용 근적외선 검출 센서 및 이를 이용한 질병 검출 방법", 2018.11.16, 한국외국어대학교, 출원번호: 10-2018-0141225.

2018-3. 김해조, 박석안 "아민-싸이올 재배열을 이용한 갈락토시데이즈 검출용 화합물 및 그 제조방법", 2016.06.24, 한국외국어대학교, 출원번호: 10-2016-0079317; 2018.03.30, 한국외국어대학교, 등록번호: 10-1845973.

2018-4. 김해조, 나상윤 "아민-싸이올 재배열을 이용한 활성산소 검출용 화합물 및 그 제조방법", 2016.06.24, 한국외국어대학교, 출원번호: 10-2016-0079262; 2018.03.30, 한국외국어대학교, 등록번호: 10-1845926.

< 2017 >

74. H.-S. Seo, H.-J. Kim,* "A Pyrone-Based Ratiometric Probe for Galactodisase with Dramatic Color and Fluorescence Changes", *Bull. Korean Chem. Soc.* **2017**, *38*, 1134-1137.

73. Hae-Jo Kim, *Comprehensive Supramolecular Chemistry II*: Chapter 8.17 "Cyanide Sensors", pp 387-399, Edited by J. L. Atwood, Oxford: Elsevier (2017).

72. Hae-Jo Kim, *Comprehensive Supramolecular Chemistry II*: Chapter 8.06 "Near-Ir Fluorescent Probes for Bioimaging", pp 107-127, Edited by J. L. Atwood, Oxford: Elsevier (2017).

< 2016 >

71. S.-Y. Na, H.-J. Kim,* "Fused oxazolidine-based dual optical probe for galactosidase with a dramatic chromogenic and fluorescence turn-on effect", *Dyes Pigmen.* **2016**, *134*, 526-530.

70. K.-S. Lee, J. Park, H.-J. Park, Y. K. Chung, S. B. Park, H.-J. Kim,* I.-S. Shin,* J.-I. Hong,* "Regenerative fluorescence "turn-on" probe for biothiols through Cu(II)/Cu(I) redox conversion", *Sens. Actuators B: Chem.* **2016**, *237*, 256-261 .

69. C. Y. Kim, H. J. Kang, S. J. Chung,* H.-K. Kim,* S.-Y. Na, H.-J. Kim,* "Mitochondria-Targeting Chromogenic and Fluorescence Turn-On Probe for the Selective Detection of Cysteine by Caged Oxazolidinoindocyanine", *Anal. Chem.* **2016**, *88*, 7178-7182.

68. C. Y. Kim, S. Park, H.-J. Kim,* "Indocyanine based dual optical probe for cyanide in HEPES buffer", *Dyes Pigmen.* **2016**, *130*, 251-255.

67. M. Yoo, S. Park, H.-J. Kim,* "Activatable colorimetric and fluorogenic probe for fluoride detection by oxazoloindole-to-hydroxyindolium transformation", *RSC Adv.* **2016**, *6*, 19910-5.

66. D. Kim, S.-Y. Na, H.-J. Kim,* "A fluorescence turn-on probe for a catalytic amount of cyanides through the cyanide-mediated cinnamate-to-coumarin transformation", *Sens. Actuators B: Chem.* **2016**, *226*, 227-231.

65. S. Park, D. J. Bae, Y.-M. Ryu, S.-Y. Kim, S.-J. Myung,* H.-J. Kim,* "Mitochondria-targeting ratiometric fluorescent probe for γ -glutamyltranspeptidase and its application to colon cancer", *Chem. Commun.* **2016**, *52*, 10400-10402.

64. S. Park, S.-Y. Lim, S. M. Bae, S.-Y. Kim, S.-J. Myung,* H.-J. Kim,* "Indocyanine-Based Activatable Fluorescence Turn-On Probe for γ -Glutamyltranspeptidase", *ACS Sens.* **2016**, *1*, 579-583.

< 2015 >

63. M. Yoo, S. Park, H.-J. Kim, * "Highly selective detection of cyanide by 2-hydroxyphenylsalicylimine of latent fluorescence through the cyanide-catalyzed imine-to-oxazole transformation", *Sens. Actuators B: Chem.* **2015**, *220*, 788-793.

62. G.-J. Kim, D.-H. Yoon, M.-Y. Yun, H. Kwon, H.-J. Ha,* H.-J. Kim,* "An activatable fluorescent probe for targeting cellular membrane through the biothiol-mediated hydrazone-to-pyrazole transformation", *Sens. Actuators B: Chem.* **2015**, *211*, 245-249.

61. S.-Y. Na, H.-J. Kim,* "Diazo-based colorimetric chemodosimeter for the selective sensing of cyanide in water", *Tetrahedron Lett.*, **2015**, *56*, 493-495.

60. H. Lee, H.-J. Kim,* "Bromoacetylfluoresceinmonoaldehyde as a fluorescent turn-on probe for cysteine over glutathione", *Sens. Actuators B: Chem.* **2015**, *209*, 652-657.

< 2014 >

59. A.-C. Yap, U. A. Mahamad, S.-Y. Lim, H.-J. Kim, Y.-M. Choo, "A Coumarin-Based Fluorescent Probe as a Central Nervous System Disease Biomarker", *Sensors*, **2014**, *14*, 21140-21150. (PMCID: 4279527)

58. S.-Y. Lim, K.-H. Hong, D. I. Kim, H. Kwon, H.-J. Kim,* "Tunable Heptamethine-Azo Dye Conjugate as an NIR Fluorescent Probe for the Selective Detection of Mitochondrial Glutathione over Cysteine and Homocysteine", *J. Am. Chem. Soc.* **2014**, *136*, 7018-7025. (PMID: 24754635)

57. G.-J. Kim, D.-H. Yoon, M.-Y. Yun, H. Kwon, H.-J. Ha, H.-J. Kim,* "Ratiometric fluorescence probes based on a Michael acceptor type of coumarins and their application for the multichannel imaging of *in vivo* glutathion", *RSC Adv.* **2014**, *4*, 18731-18736.

56. H. Lee, H.-J. Kim,* "Novel fluorescent probe for the selective detection of organophosphorous nerve agents through a cascade reaction from oxime to nitrile via isoxazole", *Tetrahedron*, **2014**, *70*, 2966-2970.

55. K.-H. Hong, D. I. Kim, H. Kwon, H.-J. Kim,* "Fluoresceinylcarbonate-based fluorescent probe for the rapid and sensitive detection of biothiols in a HEPES buffer and its cellular expression", *RSC Adv.* **2014**, *4*, 978-982.

<2013>

54. Na, S.-Y.; Kim, J.-Y.; Kim, H.-J. * "Colorimetric and fluorometric probe for the highly selective and sensitive detection of cyanide based on coumarinyloxime", *Sens. Actuators B: Chem.* **2013**, *188*, 1043.

53. Lee, H.; Kim, H.-J. * "Fluorescein aldehyde with disulfide functionality as a fluorescence turn-on probe for cysteine and homocysteine in HEPES buffer", *Org. Biomol. Chem.* **2013**, *11*, 5012. (PMID: 23797423)

52. Lim, S.-Y.; Na, M.; Kim, H.-J. * "7-Aminocoumarinyldisulfide as a ratiometric fluorescent probe for biothiols in water", *Sens. Actuators B: Chem.* **2013**, *185*, 720.

51. Lim, S.-Y.; Yoon, D.-H.; Ha, D. Y.; Ahn, J.; Kim, D. I.; Kwon, H.; Ha, H.-J.; Kim, H.-J. * "Caged rhodamine-based fluorescent probe for biothiol: Selective detection of cysteine over homocysteine and glutathione in water", *Sens. Actuators B: Chem.* **2013**, *188*, 111.

50. Hong, K.-H.; Lim, S.-Y.; Lim, J.-W.; Woo, J.-H.; Yun, M.-Y.; Kwon, H.; Kim, H.-J. * "Selective detection of cysteine over homocysteine and glutathione by a bis(bromoacetyl)fluorescein probe", *Tetrahedron Lett.* **2013**, *54*, 3003.

49. Hong, K.-H.; Kim, H.-J.* "Azo-dye based colorimetric probe for cyanide in aqueous solution", *Supramolecular Chem.* **2013**, *25*, 24.

<2012>

48. Lee, H.; Kim, H.-J.* "Highly selective sensing of cyanide by a benzochromene-based ratiometric fluorescence probe", *Tetrahedron Lett.* **2012**, *53*, 5455.

47. Park, S.; Kim, H.-J.* “Highly selective and sensitive fluorescence turn-on probe for a catalytic amount of Cu(I) ions in water through the click reaction”, *Tetrahedron Lett.* **2012**, *53*, 4473.
46. Na, S.-Y.; Park, S.; Yun, M.-Y.; Kwon, H.; Kim, H.-J.* “Latent fluorescence probe for in vivo imaging of glutathione”, *Sens. Actuators B: Chem.* **2012**, *174*, 109.
45. Park, S.; Hong, K.-H.; Hong, J.-I.; Kim, H.-J.* “Azo dye-based latent colorimetric chemodosimeter for the selective detection of cyanides in aqueous buffer”, *Sens. Actuators B: Chem.* **2012**, *174*, 140.
44. Park, S.; Kim, H.-J.* “Reaction-based chemosensor for the reversible detection of cyanide and cadmium ions”, *Sens. Actuators B: Chem.* **2012**, *168*, 376.
43. Park, S.; Kim, H.-J.* “Highly selective chemodosimeter for cyanide based on a doubly activated Michael acceptor type of coumarin thiazole fluorophore”, *Sens. Actuators B: Chem.* **2012**, *161*, 317.

<2011>

42. Lee, H.; Kim, H.-J.* “Ratiometric fluorescence chemodosimeter for mercuric ions through the Hg(II)-mediated propargyl amide to oxazole transformation”, *Bull. Korean Chem. Soc.* **2011**, *32*, 3959.
41. Lee, H.; Kim, H.-J.* “Ratiometric fluorescence chemodosimeter for mercuric ions through the Hg(II)-mediated propargyl amide to oxazole transformation”, *Tetrahedron Lett.* **2011**, *52*, 4775.
40. Lim, S.-Y.; Lee, S.; Park, S. B.; Kim, H.-J.* “Highly selective fluorescence turn-on probe for glutathione”, *Tetrahedron Lett.* **2011**, *52*, 3902.
39. Lim, S.-Y.; Kim, H.-J.* “Ratiometric detection of cysteine by a ferrocenyl Michael acceptor”, *Tetrahedron Lett.* **2011**, *52*, 3189.
38. Ha, H.-J.; Yoon, D.-H.; Park, S.; Kim, H.-J.* “Fluorescence turn-on probe for biothiols: intramolecular hydrogen bonding effect on the Michael reaction”, *Tetrahedron*, **2011**, *67*, 7759.
37. Kim, G.-J.; Lee, K.; Kwon, H.; Kim, H.-J.* “Ratiometric Fluorescence Imaging of Cellular Glutathione”, *Org. Lett.* **2011**, *13*, 2799.
36. Kwon, H.; Lee, K.; Kim, H.-J.* “Coumarin–malonitrile conjugate as a fluorescence turn-on probe for biothiols and its cellular expression”, *Chem. Commun.* **2011**, *47*, 1773.
35. Kim, K.-H.; Ju, R.; Kim, H.-J.; Jun, M.; Kim, K. M.* “Conformational Switching on Platinum(II) Coordination Plane Triggered by Oxalate Anion”, *Bull. Korean Chem. Soc.* **2011**, *32*, 3497.
34. Lee, D.-N.; Kim, D. Y.; Ghil, S. H.; Kim, H.-J.* “Coumarin-Benzothiazoline Conjugate as a Fluorescence Turn-On Probe for Reactive Oxygen Species and its Cellular Expression” *Bull. Korean Chem. Soc.* **2011**, *32*, 3109.

<2010>

33. Kim, G.-J.; Kim, H.-J.* “Highly selective and sensitive fluorescence turn-on probe for proline”, *Tetrahedron Lett.* **2010**, *51*, 4670.
32. Kim, G.-J.; Kim, H.-J.* “Coumarinyl aldehyde as a Michael acceptor type of colorimetric and fluorescent probe for cyanide in water”, *Tetrahedron Lett.* **2010**, *51*, 2914.
31. Kim, G.-J.; Kim, H.-J.* “Doubly activated coumarin as a colorimetric and fluorescent chemodosimeter for cyanide”, *Tetrahedron Lett.* **2010**, *51*, 185.
30. Do, J. H.; Kim, H. N.; Yoon, J.*; Kim, J. S.*; Kim, H.-J.* “A Rationally Designed Fluorescence Turn-On Probe for the Gold(III) Ion”, *Org. Lett.* **2010**, *12*, 932.
29. Lee, J. H.; Jeong, A. R.; Shin, I.-S.; Kim, H.-J.*; Hong, J.-I.* “Fluorescence Turn-On Sensor for Cyanide Based on a Cobalt(II)-Coumarinylsalen Complex”, *Org. Lett.* **2010**, *12*, 764.
28. Park, S.; Kim, H.-J.* “Highly activated Michael acceptor by an intramolecular hydrogen bond as a

fluorescence turn-on probe for cyanide”, *Chem. Commun.* **2010**, 46, 9197.

<2009>

27. Kim, J. H.; Kim, H. J.; Kim, S. H.; Lee, J. H.; Do, J. H.; Kim, H.-J.;*Lee, J. H.; Kim, J. S.* “Fluorescent coumarinyldithiane as a selective chemodosimeter for mercury(II) ion in aqueous solution”, *Tetrahedron Lett.* **2009**, 50, 5958.

26. Lee, D.-N.; Kim, G.-J.; Kim, H.-J.* “A Fluorescent coumarinylalkyne probe for the selective detection of mercury(II) ion in water”, *Tetrahedron Lett.* **2009**, 50, 4766.

25. Lee, D.-N.; Kim, H.; Mui, L.; Myung, S.-W.; Chin, J.;* Kim, H.-J.* “Electronic Effect on the Kinetics of the Diazo-Cope Rearrangement” *J. Org. Chem.* **2009**, 74, 3330.

24. Jou, M. J.; Chen, X.; Swamy, K. M. K.; Kim, H. N.; Park, S.; Kim, H.-J.;* Lee, S.-g.;* Yoon, J.* “Highly selective fluorescent probe for Au³⁺ based on cyclization of propargylamide”, *Chem. Commun.* **2009**, 7218.

<2008>

23. Lee, D.-N.; Kim, G.-J.; Kim, H.-J.* “A Highly selective fluorescent sensor for homocysteine and cysteine”, *Tetrahedron Lett.* **2008**, 49, 4879.

22. Lee, K.-S.; Kim, H.-J.;* Kim, G.-H.; Shin, I.; Hong, J.-I.* “Fluorescent Chemodosimeter for Selective Detection of Cyanide in Water”, *Org. Lett.* **2008**, 10, 49.

21. Tang, L.; Park, J.; Kim, H.-J.; Kim, Y.; Kim, S. J.; Chin, J.;* Kim, K. M.* “Tight Binding and Fluorescent Sensing of Oxalate in Water” *J. Am. Chem. Soc.* **2008**, 130, 12606.

20. Lee, K.-S.; Kim, T.-K.; Lee, J. H.; Kim, H.-J.;* Hong, J.-I.* “Fluorescence turn-on probe for homocysteine and cysteine in water”, *Chem. Commun.* **2008**, 6173.

19. Kim, H.; So, S. M.; Yen, C.; Vinhato, E.; Lough, A. J.; Hong, J.-I.;* Kim, H.-J.;* Chin, J.* “Highly Stereospecific Generation of Helical Chirality by Imprinting with Amino Acids: A Universal Sensor for Amino Acid Enantiopurity” *Angew. Chem. Int. Ed.* **2008**, 47, 8657. (Outside cover paper)

<2007>

18. Lee, D. H.; Kim, H.-J.;* Hong, J.-I.* “Carbohydrate Recognition by C₃-Symmetric Polypyridine Hosts”, *Supramolecular Chem.* **2007**, 19, 251.

17. Lee, H. Y.; Kim, H.-J.; Lee, K. J.; Lah, M. S.; Hong, J.-I.* “Formation of a discrete helical assembly and packing pattern through charged hydrogen bonds and van der Waals interactions” *CrystEngComm.* **2008**, 9, 78.

16. Lee, K.-S.; Lee, J. T.; Hong, J.-I.;* Kim, H.-J.* “Visual Detection of Cyanide through Intramolecular Hydrogen Bond” *Chem. Lett.* **2007**, 6, 816.

15. Kim, H.-J.;* Hong, J.-I.* “Nucleoside Recognition by a Fluorescent Macrolactam”, *Bull. Korean Chem. Soc.* **2007**, 28, 2498.

14. Kim, H.-J.; Lough, A. J.;* Chin, J. “(1*R*,2*R*)/(1*S*,2*S*)-1,2-Bis(2-hydroxyphenyl)ethylene-diammonium dibromidemonohydrate”, *Acta Crystallog. E*, **2007**, E63, o3901.

<2006>

13. Chin, J.; Kim, H.-J. *Artificial Enzymes: Ch 6 “Artificial Hydrolytic Metalloenzymes”* edited by R. Breslow, *Wiley-VCH.* **2006**, 133.

<2005>

12. Kim, K. M.;* Park, H.; Kim, H.-J.; Chin, J.;* Nam, W.* "Enantioselective Recognition of 1,2-Amino Alcohols by Reversible Formation of Imines with Resonance-Assisted Hydrogen Bonds" *Org. Lett.* **2005**, 7, 3525.
11. Kim, H.-J.; Kim, W.; Lough, A. J.; Kim, B. M.;* Chin, J.* "A Cobalt(III)-Salen Complex with an Axial Substituent in the Diamine Backbone: Stereoselective Recognition of Amino Alcohols" *J. Am. Chem. Soc.* **2005**, 127, 16776.
10. Kim, H.-J.; Kim, H.; Alhakimi, G.; Jeong, E. J.; Thavarajah, N.; Studnicki, L.; Koprianiuk, A.; Lough, A. J.; Suh, J.;* Chin, J.* "Preorganization in Highly Enantioselective Diaza-Cope Rearrangement Reaction" *J. Am. Chem. Soc.* **2005**, 127, 16370.

<2004>

9. Nam, S. R.; Kim, H.-J.; Sakamoto, S.; Yamaguchi, K.; Hong, J.-I.* "Unidirectional helical assembly via triple hydrogen bonds between chiral tris(oxazoline) and achiral tris(imidazoline)" *Tetrahedron Lett.* **2004**, 45, 1339
8. Chin, J.;* Kim, D. C.; Kim, H.-J.; Panosyan, F. B.; Kim, K. M.* "Chiral Shift Reagent for Amino Acids Based on Resonance-Assisted Hydrogen Bonding" *Org. Lett.* **2004**, 6, 2591.
7. Cho, H.-K.; Kim, H.-J.; Lee, K. H.; Hong, J.-I.* "Sugar Recognition by Triethylbenzene-based C₃-Symmetric Hosts" *Bull. Korean Chem. Soc.* **2004**, 25, 1714.

<2003>

6. Kim, H.-J.; Asif, R.; Chung, D. S.; Hong, J.-I.* "Amino acid recognition of pyridine bis(oxazolin)-copper(II) complex in aqueous solvent" *Tetrahedron Lett.* **2003**, 44, 4335.
5. Kim, H.-J.; Moon, D.; Lah, M. S.; Hong, J.-I.* "Recognition of dihydroxynaphthalenes by a C₂-symmetric host" *Tetrahedron Lett.* **2003**, 44, 1887.
4. Kim, H.-J.; Sakamoto, S.; Yanaguchi, K.; Hong, J.-I.* "Helical Assembly through Charged Hydrogen Bonds in Aqueous Solvent" *Org. Lett.* **2003**, 5, 1051.

<2002>

3. Kim, H.-J.; Moon, D.; Lah, M. S.; Hong, J.-I.* "An Enantiomerically Pure Propeller-Shaped Supramolecular Capsule Based on the Stereospecific Self-Assembly of Two Chiral Tris(oxazoline) Ligands around Three Ag^I Ions" *Angew. Chem. Int. Ed.* **2002**, 41, 3174.
2. Kim, H.-J.; Kim, Y.-H.; Hong, J.-I.* "Sugar recognition by C₃-symmetric oxazoline hosts", *Tetrahedron Lett.* **2001**, 42, 5049.

<2001>

1. Kim, H.-J.; Lim, C.; Hong, J.-I.* "Aromatic anion recognition by a self-assembled receptor in water", *Mat. Sci. Eng. C* **2001**, 18, 265.
-

Patent

16. 홍금희, 김대일, 권혁만, 김해조 “프로토노포어 검출용 조성물, 이를 포함하는 검출 센서 및 검출방법”, 2017.xx.xx, 한국외국어대학교, 출원번호 : 10-201x-00xxxx.

<2018>

15. 김해조, 이원주, 박석안, "나이트로기 환원 효소 검출용 근적외선 조성물 및 검출방법", 2018.11.16, 한국외국어대학교, 출원번호: 10-2018-0141227;

14. 김해조, 김상엽, 이원주, 박석안, "나이트로기 환원 효소 검출용 근적외선 검출 센서 및 이를 이용한 질병 검출 방법", 2018.11.16, 한국외국어대학교, 출원번호: 10-2018-0141225;

<2016>

13. 김해조, 박석안 "아민-싸이올 재배열을 이용한 갈락토시데이즈 검출용 화합물 및 그 제조방법", 2016.06.24, 한국외국어대학교, 출원번호: 10-2016-0079317; 2018.03.30, 한국외국어대학교, 등록번호: 10-1845973.

12. 김해조, 나상윤 "아민-싸이올 재배열을 이용한 활성산소 검출용 화합물 및 그 제조방법", 2016.06.24, 한국외국어대학교, 출원번호: 10-2016-0079262; 2018.03.30, 한국외국어대학교, 등록번호: 10-1845926.

11. 김해조, 박석안 "바이오 싸이올 검출용 화합물 및 그 제조방법", 2016.06.24, 한국외국어대학교, 출원번호: 10-2016-0079199.

10. 김해조, "옥사졸리디노인들을 이용한 시스템인 검출용 프로브 및 검출방법", 2016.04.21, 한국외국어대학교, 출원번호: 10-2016-0048777; 2017.11.15, 한국외국어대학교, 등록번호: 10-1799897.

9. 김해조, "옥사졸리디노인들을 이용한 시스템인 검출용 화합물 및 그 제조방법", 2016.04.21, 한국외국어대학교, 출원번호: 10-2016-0048776; 2017.11.15, 한국외국어대학교, 등록번호: 10-1799895.

8. 김해조, 나상윤 "인도시아닌을 이용한 수용성 시안화이온 검출 프루브용 화합물", 2016.04.05, 한국외국어대학교, 출원번호: 10-2016-0041488; 2017.12.04, 한국외국어대학교, 등록번호: 10-1807217.

<2015>

7. 박석안, 김해조 “감마 글루타밀 전이효소 검출용 조성물, 이를 포함하는 검출 센서 및 검출방법”, 2015.03.31, 한국외국어대학교, 출원번호: 10-2015-0044999; 2017.08.23, 한국외국어대학교, 등록번호: 10-1772428.

<2014>

6. 임수연, 홍금희, 김해조 “ 새로운 인도시아닌 유도체 화합물, 싸이올기 함유 화합물 검출용 센서”, 2014.03.12, 한국외국어대학교, 출원번호: 10-2014-0029097; 2016.01.26, 한국외국어대학교, 등록번호: 10-1590527.

5. 하현준, 임수연, 윤두하, 정재훈, 권혁만, 김해조, “감마-L-글루타밀-L-시스테인글라이신 검출용 조성물”, 2014.03.03, 한국외국어대학교, 출원번호 : 10-2014-0024980.

<2013>

4. 하현준, 윤두하, 김건중, 김해조 “ 싸이올 화합물 검출을 위한 쿠마린 유도체”, 2011.05.24, 한국외국어대학교, 출원번호: 10-2011-0048966; 2013.11.05, 한국외국어대학교, 등록번호: 10-1328000.

<2009>

3. 김해조 “세포 내의 활성 산소 형광 검출용 티아졸리딘 유도체 화합물, 세포내의 활성산소 형광 검출센서 및 검출방법”, 2009.11.05, 경기대학교, 출원번호: 10-2009-0106290.

2. 김해조 “ 아미노 페닐 알카이닐 에스테르 화합물, 그 제조방법, 이를 이용한 금 선택적 검출센서 및 검출방법”, 2009.08.28, 경기대학교, 출원번호: 10-2009-0080651.

1. 김해조 “ 큐마린알킨 화합물, 그 제조방법, 이를 이용한 수은 선택적 검출 센서 및 검출 방법”, 2009.04.10, 경기대학교, 출원번호: 10-2009-0031263.