

James Fraser STODDART

List of Publications and Patents

COMMUNICATIONS, PAPERS AND REVIEWS

1. The analytical importance of the methoxy content of Acacia gum exudates (D.M.W. Anderson, G.M. Cree, M.A. Herbich, K.A. Karamalla, J.F. Stoddart), *Talanta* **1964**, *11*, 1559–1560.
2. An infrared method for the determination of small amounts of acetaldehyde in aqueous solution (D.M.W. Anderson, J.F. Stoddart) in Proceedings of S.A.C. Symposium, Nottingham, ed. P.W. Shallis (Heffer and Sons, Cambridge) 1965, 232–238.
3. The use of Biogel-P in the gel filtration of polysaccharides (D.M.W. Anderson, I.C.M. Dea, S. Rahman, J.F. Stoddart), *Chem. Commun.* **1965**, 145–146. [28]
4. Some observations on molecular weight estimations by molecular-sieve chromatography (D.M.W. Anderson, J.F. Stoddart), *Anal. Chim. Acta* **1966**, *34*, 401–406. [55]
5. The use of molecular-sieve chromatography in studies on Acacia senegal gum (gum arabic) (D.M.W. Anderson, J.F. Stoddart), *Carbohyd. Res.* **1966**, *2*, 104–114.
6. Some structural features of *Acacia senegal* gum (gum arabic) (D.M.W. Anderson, Sir Edmund Hirst, J.F. Stoddart), *J. Chem. Soc. (C)* **1966**, 1959–1966. [63]
7. Theories of molecular-sieve chromatography (D.M.W. Anderson, J.F. Stoddart), *Lab. Practice* **1967**, *16*, 841–846.
8. Some structural features of *Acacia arabica* gum (D.M.W. Anderson, Sir Edmund Hirst, J.F. Stoddart), *J. Chem. Soc. (C)* **1967**, 1476–1486. [40]
9. Analytical Chemistry (D.M.W. Anderson, T.B. Pierce, J.F. Stoddart, J.D. Wilson), *Ann. Reports Chem. Soc.* **1967**, *63*, 657–687. [0]
10. Isolation of two arabinoses from *Acacia nilotica* gum (R.C. Chalk, J.K.N. Jones, J.F. Stoddart, W.A. Szarek), *Canad. J. Chem.* **1968**, *46*, 2311–2313. [5]
11. Medium heterocyclic rings from carbohydrate precursors (J.F. Stoddart, W.A. Szarek), Abstracts of 156th Amer. Chem. Soc. Mtg., Atlantic City, September 1968, CARB 28; *Canad. J. Chem.* **1968**, *46*, 3061–3069. [20]
12. Some structural features of *Citrus limonia* gum (lemon gum) (J.K.N. Jones, J.F. Stoddart), *Carbohyd. Res.* **1968**, *8*, 29–42. [21]
13. Some structural features of the mucilage from the bark of *Ulmus fulva* (slippery elm mucilage) (R.J. Beveridge, J.K.N. Jones, J.F. Stoddart, W.A. Szarek), *Carbohyd. Res.* **1969**, *9*, 429–439. [14]
14. Conformational studies on 1,3-dioxepans. Part I. 1,3:2,5:4,6-Tri-*O*-methylene-D-mannitol and some related compounds (T.B. Grindley, J.F. Stoddart, W.A. Szarek), *J. Chem. Soc. (B)* **1969**, 172–175. [19]
15. Conformational studies on 1,3-dioxepans. Part II. 1,3:2,5:4,6-Tri-*O*-methylene-D-mannitol and some related compounds (T.B. Grindley, J.F. Stoddart, W.A. Szarek), *J. Chem. Soc. (B)* **1969**, 623–626. [12]
16. Isochronous and anisochronous *O*-methylene protons in 4,5:9,10-bis-cyclo-hexano-1,3,6,8-tetraoxacyclo-decanes (T.B. Grindley, J.F. Stoddart, W.A. Szarek), 52nd Chemical Institute of Canada Conference in Montreal, May 1969; *J. Am. Chem. Soc.* **1969**, *91*, 4722–4724. [13]
17. Large heterocyclic rings from carbohydrate precursors (J.K.N. Jones, J.F. Stoddart, W.A. Szarek), *Canad. J. Chem.* **1969**, *47*, 3213–3215. [9]
18. Conformational studies on 1,3-dioxepans. Part III. 1,6-Dideoxy-2,5-*O*-methylene-D-mannitol and some related compounds (J.F. Stoddart, W.A. Szarek), Abstracts of 158th Amer. Chem. Soc. Meeting, New York, 1969, CARB 24; *J. Chem. Soc. (B)* **1971**, 437–442. [18]
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20. Stereochemistry at Sheffield (J.F. Stoddart), *Chem. Br.* **1972**, *10*, 216. [1]
21. Stereochemistry (J.F. Stoddart) in MTP International Review of Science, Organic Chemistry, Series One, Volume 1, ed. W.D. Ollis (1973), 1–28.
22. Molecular structure and conformations of carbohydrates (J.F. Stoddart) in MTP International Review of Science, Organic Chemistry, Series One, Volume 7, ed. G.O. Aspinall, 1973, 1–30.
23. Stereochemistry at Sheffield (J.F. Stoddart), *Chem. Br.* **1973**, *11*, 362–363. [1]

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26. Synthesis of medium heterocyclic rings from 6-deoxy-D-allose (R.G.S. Ritchie, J.F. Stoddart, W.A. Szarek, D.M. Vyas), *Carbohyd. Res.* **1974**, *32*, 279–285. [8]
27. Stereospecific synthesis of the *trans-anti-trans*- and *trans-syn-trans*-isomers of dicyclohexyl-18-crown-6 (J.F. Stoddart, C.M. Wheatley), *J. Chem. Soc., Chem. Commun.* **1974**, 390–391. [22]
28. The conformational behaviour of some medium-sized ring systems (W.D. Ollis, J.F. Stoddart, I.O. Sutherland), *Tetrahedron* **1974**, *30*, 1903–1921. [60]
29. Synthesis of macrobicyclic polyethers with carbon bridgeheads (A.C. Coxon, J.F. Stoddart), *J. Chem. Soc., Chem. Commun.* **1974**, 537. [14]
30. Constitutional isomerism in bicyclic diacetals and the conformational behaviour of *cis*-fused 1,3,6,8-tetraoxabicyclo[5,3,0]decanes (I.J. Burden, J.F. Stoddart), *J. Chem. Soc., Chem. Commun.* **1974**, 863–864. [7]
31. Configurational equilibria in 2,4-disubstituted- γ -butyrolactones (S.A.M.T. Hussain, W.D. Ollis, C. Smith, J.F. Stoddart), *J. Chem. Soc., Chem. Commun.* **1974**, 873–874. [2]
32. Conformational studies on aza and thia derivatives of 12,13-dihydro-11*H*-dibenzo[*a,e*]cyclononene (W.D. Ollis, J.F. Stoddart), *Angew. Chem., Int. Ed. Engl.* **1974**, *13*, 727–729. [3]
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36. The synthesis and conformational behaviour of *N,N',N''*-trimethyltrianthranilide (W.D. Ollis, J.A. Price, J.S. Stephanatou, J.F. Stoddart), *Angew. Chem., Int. Ed. Engl.* **1975**, *14*, 169. [18]
37. Isomerism in bicyclic diacetals. Part I. 1,3:2,4- and 1,4:2,3-di-*O*-methylene-erythritol (I.J. Burden, J.F. Stoddart), *J. Chem. Soc., Perkin Trans. 1* **1975**, 666–674. [24]
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Issue date: 2016-03-22. Patent number 9,290,495
13. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. J.F. Stoddart)
Issue date: 2016-07-26. Patent number 9,399,803
14. Supramolecular networks with electron transfer in two dimensions (A. Narayanan, A. Shveyd, J.F. Stoddart, S. Stupp, C.H. Sue, A. Tayi)
Issue date: 2016-09-13. Patent number 9,443,636
15. Modular supramolecular approach for co-crystallization of donors and acceptors into ordered networks (A. Narayanan, A. Shveyd, J.F. Stoddart, S. Stupp, C. H. Sue, A. Tayi)
Issue date: 2016-09-20. Patent number 9,449,731
16. Redox active triangular organic materials (M. Frasconi, Z. Liu, S. Schneebeli, J.F. Stoddart)
Issue date: 2017-01-17. Patent number 9,546,169
17. A homochiral metal-organic framework with enantiopure pillar[5]arene active domains (J.F. Stoddart, N.L. Strutt)
Issue date: 2017-11-14. Patent number 9,815,764
18. ExCage: Synthesis of viologen-like pyridinium-based cages for the selective capture of polycyclic aromatic hydrocarbons (J. Barnes, E. Dale, M. Juricek, J.F. Stoddart, N. Vermeulen)
Issue date: 2017-11-28. Patent number 9,828,259
19. Methods of making diazaperopyrenium dications and uses thereof (A.N. Basuray, K. Hartlieb, H.P. Jacquot, S. Sampath, J.F. Stoddart)
Issue date: 2017-11-28. Patent number 9,828,371
20. Supramolecular networks with electron transfer in two dimensions (A. Narayanan, A. Shveyd, J.F. Stoddart, S. Stupp, C.H. Sue, A. Tayi)
Issue date: 2018-06-12. Patent number 9,997,271
21. Modular supramolecular approach for co-crystallization of donors and acceptors into ordered networks (A. Narayanan, A. Shveyd, J.F. Stoddart, S. Stupp, C.H. Sue, A. Tayi)
Issue date: 2018-06-12. Patent number 9,997,272

22. Nanoporous carbohydrate frameworks and the sequestration and detection of molecules using the same (R.S. Forgan, J.J. Gassensmith, R.A. Smaldone, J.F. Stoddart)
Issue date: 2018-11-13. Patent number 10,125,016
23. Electrochemical detection of carbon dioxide using a carbohydrate based coordination polymer (O. Farha, J. Gassensmith, N. Jeong, J.F. Stoddart)
Issue date: 2019-03-12. Patent number 10,228,343
24. Carbohydrate-mediated purification of petrochemicals (K. Hartlieb, J. Holcroft, J. Stoddart)
Issue date: 2019-03-26. Patent number 10,239,044
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Issue date: 2019-04-16. Patent number 10,259,913

PROVISIONAL PATENT APPLICATIONS

1. **Serial No.:** 61/314,889
Inventors: J. F. Stoddart, A. M. Z. Slawin, R. S. Forgan, R. A. Smaldone
Filing Date: 2010-03-17
Title: Nanoporous carbohydrate frameworks
2. **Serial No.:** 61/351,704
Inventors: J. F. Stoddart, J. J. Gassensmith, R. S. Forgan, R. A. Smaldone
Filing Date: 2010-06-04
Title: Sequestration and detection of carbon dioxide by a metal organic framework
3. **Serial No.:** 61/314,897
Inventors: J. F. Stoddart, C.-H. Sue, S. Basu
Filing Date: 201-03-17
Title: A novel purification of CBPQT⁴⁺ macrocycle
4. **Serial No.:** 61/488,605
Inventors: S. I. Stupp, J. F. Stoddart, A. K. Shveyd, A. S. Tayi, C.-H. Sue
Filing Date: 2011-05-20
Title: Lock-arm supramolecular ordering
5. **Serial No.:** 61/498,262
Inventors: S. I. Stupp, J. F. Stoddart, A. K. Shveyd, A. S. Tayi, C.-H. Sue
Filing Date: 2011-06-17
Title: Visible pleochroism in a supramolecular material
6. **Serial No.:** 61/498,277
Inventors: S. I. Stupp, J. F. Stoddart, A. K. Shveyd, A. S. Tayi, C.-H. Sue
Filing Date: 2011-06-17
Title: Supramolecular design for ferroelectric charge crystals
7. **Serial No.:** 61/537,852
Inventors: J. F. Stoddart, A. C. Fahrenbach, J. C. Barnes, S. Sampath, A. N. Basuray, H. Li
Filing Date: 2011-09-22
Title: Crystalline bipyridinium radical complexes and uses thereof
8. **Serial No.:** 61/550,748
Inventors: J. F. Stoddart, S. Grunder, A. C. Whalley, C. Valente
Filing Date: 2011-10-24
Title: Molecular gauge blocks for building on the nanoscale

9. **Serial No.:** 61/740,958
Inventors: J. F. Stoddart, J. C. Barnes, M. Juríček
Filing Date: 2012-12-21
Title: Tetracationic cyclophanes and their use in the sequestration of polyaromatic hydrocarbons by way of complexation
10. **Serial No.:** 61/814,066
Inventors: J. F. Stoddart, Z. Liu, M. Frasconi, D. Cao
Filing Date: 2013-04-19
Title: Compounds and methods to isolate gold
11. **Serial No.:** 61/883,352
Inventors: J. F. Stoddart, S. Sampath, A. N. Basuray, K. J. Hartlieb, H.-P. Jaquot de Rouville
Filing Date: 2013-09-27
Title: Methods of making diazaperopyrenium dications and uses thereof
12. **Serial No.:** 62/008,671
Inventors: K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: 2014-06-06
Title: Carbohydrate-mediated purification of petrochemicals
13. **Serial No.:** 62/045,517
Inventors: O. K. Farha, J. J. Gassensmith, J. F. Stoddart, N. C. Jeong
Filing Date: 2014-09-03
Title: Electrochemical detection of carbon dioxide using a carbohydrate based coordination polymer
14. **Serial No.:** 62/045,531
Inventors: J. F. Stoddart, M. Frasconi, S. T. Schneebeli, Z. Liu
Filing Date: 2014-09-03
Title: Redox active triangular organic materials
15. **Serial No.:** 62/045,511
Inventors: J. F. Stoddart, J. C. Barnes, M. Juríček, E. J. Dale, N. A. Vermeulen
Filing Date: 2014-09-03
Title: ExCage: Synthesis of viologen-like pyridinium-based cages for the selective capture of polycyclic aromatic hydrocarbons
16. **Serial No.:** 62/045,514
Inventors: J. F. Stoddart, N. L. Strutt
Disclosure Date: 2014-09-03
Title: A homochiral metal-organic framework with enantiopure pillar[5] arene active domains
17. **Serial No.:** 62/057,059
Inventors: J. F. Stoddart, X. Hou, C. Ke
Filing Date: 2014-09-29
Title: Supramolecular encrypted fluorescent security ink compositions
18. **Serial No.:** 62/057,102
Inventors: J. F. Stoddart, X. Hou, C. Ke, R. B. Pettman
Filing Date: 2014-09-29
Title: Supramolecular encrypted fluorescent security ink compositions
19. **Serial No.:** 62/135,339
Inventors: J. F. Stoddart, D. Chen, A.-J. Avestro, J. Sun, Z. B. Erno

- Filing Date:** 2015-03-19
Title: Rigid naphthalenediimide triangle structures
20. **Serial No.:** 62/255,490
Inventors: D. Ferris, K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: 2015-11-15
Title: Uptake of pharmaceuticals within cyclodextrin-based porous materials
21. **Serial No.:** 62/278,200
Inventors: Z. Liu, J.F. Stoddart
Filing Date: 2016-01-13
Title: Supramolecular assembly of rigid macrocycles through cooperative hydrogen bond interactions
22. **Serial No.:** 62/288,701
Inventors: M. Frasconi, J.F. Stoddart, J. Sun, Y. Wang
Filing Date: 2016-01-29
Title: Viologen-based rotaxanes
23. **Serial No.:** 62/308,998
Inventors: Z. Liu, S. Nalluri, J.F. Stoddart
Filing Date: 2016-03-16
Title: Rigid chiral redox-active isosceles triangles
24. **Serial No.:** 62/321,290
Inventors: V. Dravid, D. Ferris, K.A. Hujsak, M. Owczarek, A. Prokofjevs, J.F. Stoddart
Filing Date: 2016-04-12
Title: Flexible piezoelectric and antiferroelectric haloimidazole crystals
25. **Serial No.:** 62/382,994
Inventors: V. Dravid, D. Ferris, D. Hong, K.A. Hujsak, M. Owczarek, A. Prokofjevs, J.F. Stoddart
Filing Date: 2016-09-02
Title: Flexible piezoelectric and antiferroelectric haloimidazole crystals
26. **Serial No.:** 62/416,334
Inventors: D. Ferris, K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: 2016-11-02
Title: Loading and bioavailability of ibuprofen/CD-MOF formulations
27. **Serial No.:** 62/531,115
Inventors: Z. Liu, J.F. Stoddart, J. Sun
Filing Date: 2017-07-11
Title: Mechanically interlocked air-stable radicals
28. **Serial No.:** 62/535,579
Inventors: Z. Liu, S. Nalluri, H. Patel, J.F. Stoddart
Filing Date: 2017-07-21
Title: Lithiated cyclodextrin metal organic frameworks and methods of making and using the same
29. **Serial No.:** 62/580,860
Inventors: H. Patel, J.F. Stoddart
Filing Date: 2017-11-02
Title: Troger's base-linked poly(crown ether)s
30. **Serial No.:** 62/619,561
Inventors: S. Nalluri, J.F. Stoddart

Filing Date: 2018-01-19
Title: Rigid chiral photoluminescent isocetes triangular materials

31. **Serial No.:** 62/653,301
Inventors: M. Nguyen, J.F. Stoddart
Filing Date: 2018-04-05
Title: Densely charged catenanes
32. **Serial No.:** 62/658,048
Inventors: I. Roy, J.F. Stoddart
Filing Date: 2018-04-16
Title: Cyclophanes for live-cell imaging
33. **Serial No.:** 62/680,352
Inventors: Z. Liu, J.F. Stoddart
Filing Date: 2018-06-04
Title: Mixed-valence crystal superstructures
34. **Serial No.:** 62/691,923
Inventors: M. Nguyen, J.F. Stoddart
Filing Date: 2018-06-29
Title: Densely Charged Catenanes
35. **Serial No.:** 62/700,614
Inventors: J. Choi, D.J. Kim, J.F. Stoddart, D.-J. Yoo
Filing Date: 2018-07-19
Title: Rechargeable Aluminum Organic Batteries
36. **Serial No.:** 62/799,229
Inventors: I. Roy, J.F. Stoddart
Filing Date: 2019-01-31
Title: Supramolecular Photoprotection of a Photosensitizer for Safe Lysosomal Delivery and Anticancer Therapy

PENDING US PATENT APPLICATIONS

1. **Serial No.:** 13/658,973
Inventors: J. F. Stoddart, S. Grunder, A. C. Whalley, C. Valente
Filing Date: 2012-10-24
Title: Molecular gauge blocks for building on the nanoscale
2. **Serial No.:** 14/733,875
Inventors: J. F. Stoddart, K. J. Hartlieb, J. M. Holcroft
Filing Date: 2015-06-08
Title: Carbohydrate-mediated purification of petrochemicals
3. **Serial No.:** 14/867,826
Inventors: X. Hou, C. Ke, J.F. Stoddart
Filing Date: 2015-09-28
Title: Supramolecular fluorescent dyes
4. **Serial No.:** 14/867,953
Inventors: X. Hou, C. Ke, J.F. Stoddart
Filing Date: 2015-09-28
Title: Supramolecular encrypted fluorescent security ink compositions

5. **Serial No.:** 15/074,161
Inventors: A.-J. Avestro, D. Chen, Z. Erno, J.F. Stoddart, J. Sun
Filing Date: 2016-03-18
Title: Rigid naphthalenediimide triangle structures
6. **Serial No.:** 15/218,280
Inventors: D. Cao, M. Frascioni, Z. Liu, J.F. Stoddart
Filing Date: 2016-07-25
Title: Compounds and methods to isolate gold
7. **Serial No.:** 15/350,975
Inventors: D. Ferris, K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: 2016-11-14
Title: Uptake of pharmaceuticals within cyclodextrin-based porous materials
8. **Serial No.:** 16/032,212
Inventors: Z. Liu, J.F. Stoddart, J. Sun
Filing Date: 2018-07-11
Title: Mechanically interlocked air-stable radicals
9. **Serial No.:** 16/069,940
Inventors: Z. Liu, J.F. Stoddart
Filing Date: 2018-07-13
Title: Supramolecular assembly of rigid macrocycles through cooperative hydrogen bond interactions
10. **Serial No.:** 16/085,436
Inventors: Z. Liu, S. Nalluri, J.F. Stoddart
Filing Date: 2018-09-14
Title: Rigid chiral redox-active isocenes triangular materials
11. **Serial No.:** 16/093,256
Inventors: V. Dravid, D. Ferris, D. Hong, K.A. Hujsak, M. Owczarek, A. Prokofjevs, J.F. Stoddart
Filing Date: 2018-10-12
Title: Flexible piezoelectric and antiferroelectric haloimidazole crystals
12. **Serial No.:** 16/269,311
Inventors: X. Hou, C. Ke, R. Pettman, J.F. Stoddart
Filing Date: 2019-02-06
Title: Supramolecular encrypted fluorescent security ink compositions

PCT APPLICATIONS

1. **Serial No.:** PCT/US2011/028866
Inventors: J. J. Gassensmith, R. A. Smaldone, R. S. Forgan, J. F. Stoddart
Filing Date: 2011-03-17
Title: Nanoporous carbohydrate frameworks and the sequestration and detection of molecules using the same
2. **Serial No.:** PCT/US2012/038896
Inventors: S. I. Stupp, J. F. Stoddart, A. K. Shveyd, A. S. Tayi, C.-H. Sue
Filing Date: 2012-05-21
Title: Modular supramolecular approach for co-crystallization of donors and acceptors into ordered networks
3. **Serial No.:** PCT/US2012/042978
Inventors: S. I. Stupp, J. F. Stoddart, A. K. Shveyd, A. S. Tayi, C.-H. Sue

- Filing Date:** 2012-06-18
Title: Visible pleochroism in a supramolecular material
4. **Serial No.:** PCT/US2013/077144
Inventors: J. F. Stoddart, J. C. Barnes, M. Juríček
Filing Date: 2013-12-20
Title: Tetracationic cyclophanes and their use in the sequestration of polyaromatic hydrocarbons by way of complexation
5. **Serial No.:** PCT/US2014/034697
Inventors: J. F. Stoddart, Z. Liu, M. Frasconi, D. Cao
Filing Date: 2014-04-18
Title: Compounds and methods to isolate gold
6. **Serial No.:** PCT/US2015/034754
Inventors: J. F. Stoddart, K. J. Hartlieb, J. M. Holcroft
Filing Date: 2015-06-08
Title: Carbohydrate-mediated purification of petrochemicals
7. **Serial No.:** PCT/US2015/052670
Inventors: X. Hou, C. Ke, J.F. Stoddart
Filing Date: 2015-09-28
Title: Supramolecular fluorescent dyes
8. **Serial No.:** PCT/US2015/052694
Inventors: X. Hou, C. Ke, R. Pettman, J.F. Stoddart
Filing Date: 2015-09-28
Title: Supramolecular encrypted fluorescent security ink compositions
9. **Serial No.:** PCT/US2016/023111
Inventors: A.-J. Avestro, D. Chen, Z. Erno, J.F. Stoddart, J. Sun
Filing Date: 2016-03-16
Title: Rigid naphthalenediimide triangle structures
10. **Serial No.:** PCT/US2016/061963
Inventors: D. Ferris, K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: 2016-11-15
Title: Uptake of pharmaceuticals within cyclodextrin-based porous materials
11. **Serial No.:** PCT/US2017/013301
Inventors: Z. Liu, J.F. Stoddart
Filing Date: 2017-01-13
Title: Supramolecular assembly of rigid macrocycles through cooperative hydrogen bond interactions
12. **Serial No.:** PCT/US2017/015299
Inventors: M. Frasconi, J.F. Stoddart, J. Sun, Y. Wang
Filing Date: 2017-01-27
Title: Viologen-based rotaxanes
13. **Serial No.:** PCT/US2017/022668
Inventors: Z. Liu, S. Nalluri, J.F. Stoddart
Filing Date: 2017-03-16
Title: Rigid chiral redox-active isocetes triangular materials

14. **Serial No.:** PCT/US2017/027170
Inventors: V. Dravid, D. Ferris, D. Hong, K.A. Hujsak, M. Owczarek, A. Prokofjevs, J.F. Stoddart
Filing Date: 2017-04-12
Title: Flexible piezoelectric and antiferroelectric haloimidazole crystals
15. **Serial No.:** PCT/US2018/041551
Inventors: Z. Liu, J.F. Stoddart, J. Sun
Filing Date: 2018-07-11
Title: Mechanically interlocked air-stable radicals
16. **Serial No.:** PCT/US2018/043217
Inventors: Z. Liu, S. Nalluri, H. Patel, J.F. Stoddart
Filing Date: 2018-07-23
Title: Lithiated cyclodextrin metal organic frameworks and methods of making and using the same
17. **Serial No.:** PCT/US2018/059046
Inventors: H. Patel, J.F. Stoddart
Filing Date: 2018-11-02
Title: Troger's base-linked poly(crown ether)s
18. **Serial No.:** PCT/US2019/014415
Inventors: S. Nalluri, J.F. Stoddart
Filing Date: 2019-01-21
Title: Rigid chiral photoluminescent isosceles triangular materials
19. **Serial No.:** PCT/US2019/026095
Inventors: M. Nguyen, J.F. Stoddart
Filing Date: 2019-04-05
Title: Densely charged catenanes
20. **Serial No.:** PCT/US2019/027713
Inventors: I. Roy, J.F. Stoddart
Filing Date: 2019-04-16
Title: Cyclophanes for live-cell imaging

ISSUED FOREIGN PATENTS

1. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart).
Issue date: 2018-10-11. Country: Australia Patent number: 2014253728.
2. Carbohydrate-Mediated Purification of Petrochemicals (K. Hartlieb, J. Holcroft, J.F. Stoddart).
Issue date: 2018-11-07. Country: EPO Patent number: EP 3077104.
3. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart).
Issue date: 2019-04-03. Country: Armenia Patent number: EUR 024977.
4. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart).
Issue date: 2019-04-03. Country: Azerbaijan Patent number: EUR 024977.
5. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart).
Issue date: 2019-04-03. Country: Belarus Patent number: EUR 024977.
6. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart).
Issue date: 2019-04-03. Country: Kazakhstan Patent number: EUR 024977.
7. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart).
Issue date: 2019-04-03. Country: Kyrgyzstan Patent number: EUR 024977.

8. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart). Issue date: 2019-04-03. Country: Russia Patent number: EUR 024977.
9. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart). Issue date: 2019-04-03. Country: Tajikistan Patent number: EUR 024977.
10. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart). Issue date: 2019-04-03. Country: Turkmenistan Patent number: EUR 024977.
11. Compounds and Methods to Isolate Gold (D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart). Issue date: 2019-04-03. Country: Eurasia Patent number: EUR 024977.
12. Tetracationic Cyclophanes and Their Use in the Sequestration of Polyaromatic Hydrocarbons by Way of Complexation (J. Barnes, M. Juricek, J.F. Stoddart). Issue date: 2016-08-28. Country: Saudi Arabia Patent number: SA 5024.

PENDING FOREIGN PATENT APPLICATIONS

1. **Serial No.:** EP 13866011.3
Country: EPO
Inventors: J. F. Stoddart, J. C. Barnes, M. Juríček
Filing Date: 2015-06-24
Title: Tetracationic cyclophanes and their use in the sequestration of polyaromatic hydrocarbons by way of complexation
2. **Serial No.:** CA 2,909,203
Country: Canada
Inventors: D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart
Filing Date: 2015-10-08
Title: Compounds and Methods to Isolate Gold
3. **Serial No.:** PH 1-2015-502366
Country: Philippines
Inventors: D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart
Filing Date: 2015-10-02
Title: Compounds and Methods to Isolate Gold
4. **Serial No.:** PERU 002159-2015/DIN
Country: Peru
Inventors: D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart
Filing Date: 2015-10-15
Title: Compounds and Methods to Isolate Gold
5. **Serial No.:** CN 201480023847.X
Country: China
Inventors: D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart
Filing Date: 2015-10-27
Title: Compounds and Methods to Isolate Gold
6. **Serial No.:** EP 14785085.3
Country: EPO
Inventors: D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart
Filing Date: 2015-11-04
Title: Compounds and Methods to Isolate Gold
7. **Serial No.:** UZ IAP20150425
Country: Uzbekistan

- Inventors:** D. Cao, M. Frasconi, Z. Liu, J.F. Stoddart
Filing Date: 2015-11-04
Title: Compounds and Methods to Isolate Gold
8. **Serial No.:** CN 201780025678.7
Country: China
Inventors: Z. Liu, S. Nalluri, J.F. Stoddart
Filing Date: 2017-03-16
Title: Rigid Chiral Redox-Active Isosceles Triangular Materials
9. **Serial No.:** SA 517382329
Country: Saudi Arabia
Inventors: A.-J. Avestro, D. Chen, Z. Erno, J.F. Stoddart, J. Sun
Filing Date: 2017-09-17
Title: Rigid Naphthalenediimide Triangle Structures
10. **Serial No.:** ARAB EMIRATES P60011
Country: Arab Emirates
Inventors: A.-J. Avestro, D. Chen, Z. Erno, J.F. Stoddart, J. Sun
Filing Date: 2017-09-19
Title: Rigid Naphthalenediimide Triangle Structures
11. **Serial No.:** EP16765820.2
Country: EPO
Inventors: A.-J. Avestro, D. Chen, Z. Erno, J.F. Stoddart, J. Sun
Filing Date: 2017-10-27
Title: Rigid Naphthalenediimide Triangle Structures
12. **Serial No.:** CN 201680028163.8
Country: China
Inventors: A.-J. Avestro, D. Chen, Z. Erno, J.F. Stoddart, J. Sun
Filing Date: 2017-11-15
Title: Rigid Naphthalenediimide Triangle Structures
13. **Serial No.:** SA 518392119
Country: Saudi Arabia
Inventors: D. Ferris, K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: 2018-07-31
Title: Uptake of Pharmaceuticals within Cyclodextrin-based Porous Materials
14. **Serial No.:** CN 201780015076.3
Country: China
Inventors: M. Frasconi, J.F. Stoddart, J. Sun, Y. Wang
Filing Date: 2018-09-04
Title: Viologen-Based Rotaxanes
15. **Serial No.:** SA 518400208
Country: Saudi Arabia
Inventors: V. Dravid, D. Ferris, D. Hong, K.A. Hujsak, M. Owczarek, A. Prokofjevs, J.F. Stoddart
Filing Date: 2018-10-10
Title: Flexible Piezoelectric and Antiferroelectric Haloimidazole Crystals
16. **Serial No.:** SA 518400208
Country: Saudi Arabia
Inventors: V. Dravid, D. Ferris, D. Hong, K.A. Hujsak, M. Owczarek, A. Prokofjevs, J.F. Stoddart
Filing Date: 2018-10-10

- Title:** Flexible Piezoelectric and Antiferroelectric Haloimidazole Crystals
17. **Serial No.:** EP 17783042.9
Country: EPO
Inventors: V. Dravid, D. Ferris, D. Hong, K.A. Hujsak, M. Owczarek, A. Prokofjevs, J.F. Stoddart
Filing Date: 2018-11-12
Title: Flexible Piezoelectric and Antiferroelectric Haloimidazole Crystals
18. **Serial No.:** CN 201780031574.7
Country: China
Inventors: V. Dravid, D. Ferris, D. Hong, K.A. Hujsak, M. Owczarek, A. Prokofjevs, J.F. Stoddart
Filing Date: 2018-11-22
Title: Flexible Piezoelectric and Antiferroelectric Haloimidazole Crystals
19. **Serial No.:** TO BE PROVIDED
Country: China
Inventors: K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: TO BE PROVIDED
Title: Carbohydrate-Mediated Purification of Petrochemicals
20. **Serial No.:** CN201680072938.1
Country: China
Inventors: D. Ferris, K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: TO BE PROVIDED
Title: Uptake of Pharmaceuticals within Cyclodextrin-based Porous Materials
21. **Serial No.:** EP 16865255.0
Country: EPO
Inventors: D. Ferris, K. Hartlieb, J. Holcroft, J.F. Stoddart
Filing Date: TO BE PROVIDED
Title: Uptake of Pharmaceuticals within Cyclodextrin-based Porous Materials
22. **Serial No.:** TO BE ASSIGNED
Country: Saudi Arabia
Inventors: Z. Liu, S. Nalluri, J.F. Stoddart
Filing Date: TO BE PROVIDED
Title: Rigid Chiral Redox-Active Isosceles Triangular Materials