SciFinder^{n}

Patent Search and Chemscape Analysis

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Senior Customer Success Specialist

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Agenda

- Patent coverage in SciFinder^{n}
- Patent indexing in SciFinder^{n}
- Patent information in SciFinder^{n}
- Searching for Patents in SciFinder^{n}
- Chemscape Analysis
- Markush search in SciFinder^{n}

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Patent coverage in SciFinder^{n}

- CAS covers patents from 64 patent issuing authorities

- Inclusion of patents in SciFinder^{n} depends on
  - Country
  - Time of publication
  - International Patent Classification (IPC)

- A summary of patent coverage is available on the CAS website: https://www.cas.org/support/documentation/references/patentcoverage

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Patent coverage in SciFinder^n

- SciFinder^n has guaranteed and selective IPCs
  - If a guaranteed IPC is associated with a patent, that patent will be in SciFinder^n. If selective, the patent goes through further analysis to determine if it is "chemically relevant."

- Coverage of patent kinds and years differs by patent authorities

IE Ireland	A1	Patent Application	2002-
	A2	Short-Term Patent Application	2002-
IL Israel	A	Patent Application	1966-
IN India	A	Patent Application	2004-
	B	Patent Specification	1948-

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Timeliness for patent authorities

Patent Issuing Authority	Bibliographic Information & Abstract	Fully indexed
US, WO, EP, DE, GB, FR, CA, RU, JP	Within 2 days of publication	Within 27 days
CN, KR, IN	Within 14 days of publication	Within 49 days

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Indexing of patents and patent families

- The first application abstracted and indexed is called the basic application or basic patent
  - CAS lists the first published application received as the “Basic Application”
- Subsequent publications relating to the invention will show the Priority Application Number of the basic application
  - Equivalent family members are added via computer algorithm
- Multiple documents may be treated as basics
  - The Patent Cooperation Treaty (WO) application
  - Original national equivalent(s) with oldest priority from the U.S., Germany, Great Britain, France, Canada, or the European Patent Office (EPO)

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Patent families in SciFinder^{n}

- Patent families list publications from around the world describing the same invention
- These publications cite common date(s) and priority number(s)
- It is a convenient method of summarizing worldwide patent information sought by an applicant

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Simple vs. complex patent families

- Simple patent family
  - All equivalents have a common priority application number
  - Priority applications are the first applications filed for a particular invention or for a particular aspect of an invention

- Complex patent family
  - Family members are related to more than one priority application number that are all somehow related to one another through multiple divisional and/or CIP applications

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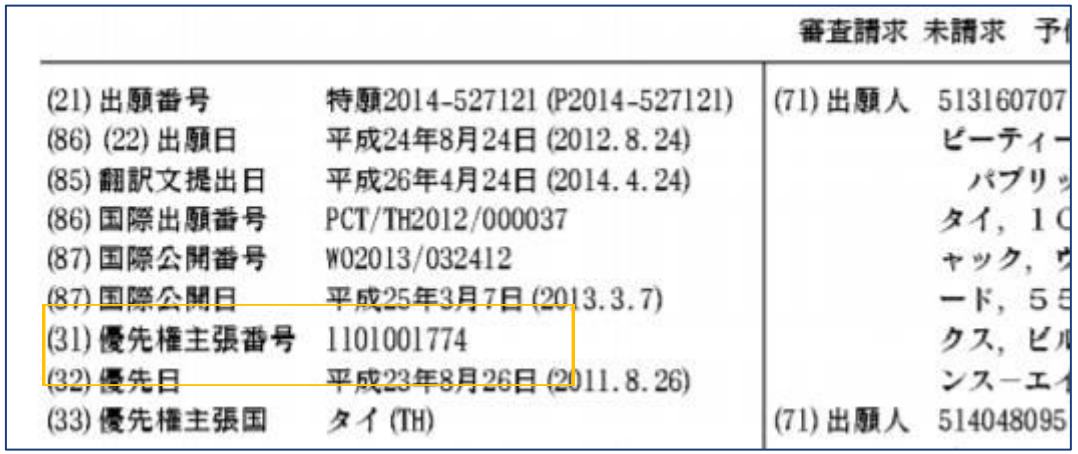
Simple patent family

Patent Family

Patent	Language	Kind Code	PatentPak Options	Publication Date	Application Number	Application Date
WO2013032412	English	A1	PDF | PDF+ | Viewer	2013-03-07	WO2012-TH37	2012-08-24
					TH2011-1001774	2011-08-26
AU2012302299	English	A1	PDF	2014-04-10	AU2012-302299	2012-08-24
IL231155	English	A		2014-04-30		
EP2748144	English	A1		2014-07-02		
KR2014083998	Korean	A	PDF	2014-07-04		
CN103917521	Chinese	A	PDF	2014-07-09		
JP2014529607	Japanese	T	PDF	2014-11-13		



審査請求 未請求 予

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(86) (22) 出願日 平成24年8月24日 (2012.8.24)
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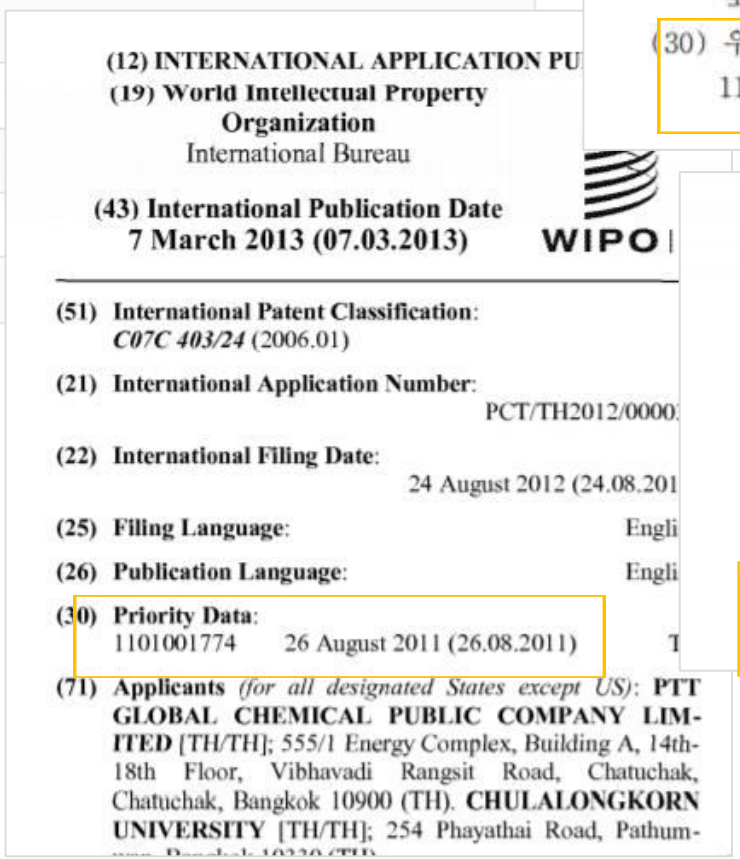
(32) 優先日 平成23年8月26日 (2011.8.26)
(33) 優先権主張国 タイ (TH)

(71) 出願人 513160707 ピーティー パブリッ タイ, 1 C ャック, ウ ード, 5 5 クス, ビル ンス－エイ
(71) 出願人 514048095



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International Bureau

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(25) Filing Language: Engli

(26) Publication Language: Engli

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(12) 공개특허공보(A)

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(22) 출원일자(국제) 2012년08월24일
심사청구일자 없음
(85) 번역문제출일자 2014년03월24일
(86) 국제출원번호 PCT/TH2012/000037
(87) 국제공개번호 WO 2013/032412
국제공개일자 2013년03월07일
(30) 우선권주장
1101001774 2011년08월26일 태국(TH)

(19) 中华人民共和国国家知识产权局

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(30) 优先权数据
1101001774 2011.08.26 TH

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Complex patent family

Patent Family

Patent	Language	Kind Code	PatentPak Options	Publication Date	Application Number	Application Date
US20090124415	English	A1	PDF | PDF+ | Viewer	2009-05-14	US2008-12337718	2008-12-18
US7427242	English	B1	PDF | PDF+ | Viewer	2008-09-23	US2007-11939635	2007-11-14
US20090124426	English	A1		2009-05-14	US2008-12196514	2008-08-22
US20090124427	English	A1		2009-05-14	US2008-12196522	2008-08-22
US7582025	English	B2		2009-09-01	US2008-12196522	2008-08-22
US7621825	English	B2		2009-11-24	US2008-12196514	2008-08-22
US20090124414	English	A1	PDF | PDF+ | Viewer	2009-05-14	US2008-12335935	2008-12-16
US7762910	English	B2		2010-07-27	US2008-12335935	2008-12-16
US7942761	English	B2	PDF	2011-05-17	US2008-12337718	2008-12-18
US20090124416	English	A1	PDF | PDF+ | Viewer	2009-05-14	US2008-12339495	2008-12-19
US7815526	English	B2		2010-10-19	US2008-12339495	2008-12-19
US20090124417	English	A1	PDF | PDF+ | Viewer	2009-05-14	US2008-12342545	2008-12-23
US7946934	English	B2	PDF	2011-05-24	US2008-12342545	2008-12-23
US20100173726	English	A1	PDF | PDF+ | Viewer	2010-07-08	US2010-12695379	2010-01-28
US8454454	English	B2	PDF	2013-06-04	US2010-12695379	2010-01-28
US20100222156	English	A1		2010-09-02	US2010-12781281	2010-05-17
US20100227708	English	A1	PDF | PDF+ | Viewer	2010-09-09	US2010-12781245	2010-05-17
US20100227709	English	A1		2010-09-09	US2010-12781310	2010-05-17
US7967703	English	B2	PDF	2011-06-28	US2010-12781310	2010-05-17
US8523708	English	B2	PDF	2013-09-03	US2010-12781245	2010-05-17

Complex patent families usually arise from the addition of continuation, divisional, and/or continuation-in-part applications.

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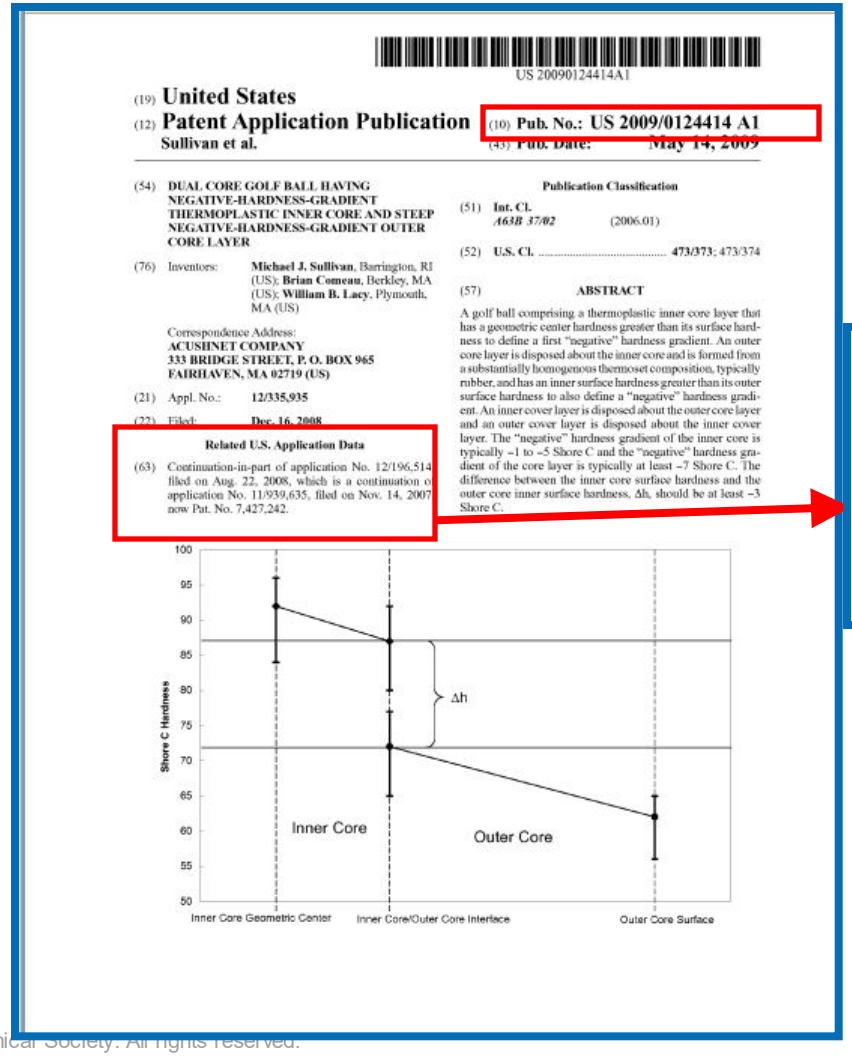
Examine the full text to get the big picture



US 20090124414A1

(19) **United States**

(12) **Patent Application Publication**

Sullivan et al.

(10) **Pub. No.: US 2009/0124414 A1**

(43) **Pub. Date: May 14, 2009**

(54) **DUAL CORE GOLF BALL HAVING NEGATIVE-HARDNESS-GRADIENT THERMOPLASTIC INNER CORE AND STEEP NEGATIVE-HARDNESS-GRADIENT OUTER CORE LAYER**

(76) Inventors: **Michael J. Sullivan**, Barrington, RI (US); **Brian Comeau**, Berkley, MA (US); **William B. Lacy**, Plymouth, MA (US)

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FAIRHAVEN, MA 02719 (US)

(21) Appl. No.: **12/335,935**

(22) Filed: **Dec. 16, 2008**

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/196,514 filed on Aug. 22, 2008, which is a continuation of application No. 11/939,635, filed on Nov. 14, 2007, now Pat. No. 7,427,242.

Publication Classification

(51) **Int. Cl.**
A63B 37/02 (2006.01)

(52) **U.S. Cl.** **473/373**; 473/374

(57) **ABSTRACT**

A golf ball comprising a thermoplastic inner core layer that has a geometric center hardness greater than its surface hardness to define a first "negative" hardness gradient. An outer core layer is disposed about the inner core and is formed from a substantially homogenous thermoset composition, typically rubber, and has an inner surface hardness greater than its outer surface hardness to also define a "negative" hardness gradient. An inner cover layer is disposed about the outer core layer and an outer cover layer is disposed about the inner cover layer. The "negative" hardness gradient of the inner core is typically −1 to −5 Shore C and the "negative" hardness gradient of the core layer is typically at least −7 Shore C. The difference between the inner core surface hardness and the outer core inner surface hardness, Δh, should be at least −3 Shore C.

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/196,514, filed on Aug. 22, 2008, which is a continuation of application No. 11/939,635, filed on Nov. 14, 2007, now Pat. No. 7,427,242.

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Indexing of patents

- Multiple documents may be treated as basics
  - The Patent Cooperation Treaty (WO) application
  - Original national equivalent(s) with oldest priority from the U.S., Germany, Great Britain, France, Canada, or the European Patent Office (EPO)

Double basic patent

Patent Family

Patent	Language	Kind Code	PatentPak Options	Publication Date	Application Number	Application Date
WO2013165324	English	A2	PDF | PDF+ | Viewer	2013-11-07	WO2013-TH17	2013-04-05
					TH2012-1001608	2012-04-05
WO2013165324	English	A3	PDF	2014-03-20	WO2013-TH17	2013-04-05
US20150056756	English	A1	PDF | PDF+ | Viewer	2015-02-26	US2014-14390992	2014-10-06
US9607916	English	B2	PDF	2017-03-28	US2014-14390992	2014-10-06

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Language analysis in SciFinder^{n}

- The language listed in the SciFinder^{n} record is the language of the indexed, basic patent
- Be careful when removing foreign language patent publications
- Removing foreign language basic patents may remove corresponding English language equivalent information

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Live Demo 1: Searching for patents in SciFinder^n

- Keywords
- Author
- Organization
- Patent number ✓

Example:

1. Find patents on *yeast with lactic acid tolerance*.
2. Find patent
   - WO2021034276
   - KR2018134995
   - US9012698

Information in SciFinder^{n} patent records

- Enhanced titles
- Enhanced abstracts
- Subject indexing
- Citations

Search References

- Substance indexing

Search Substances

- Reactions

Search Reactions

- Markush

Search Markush

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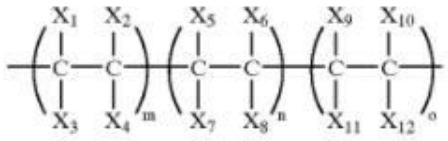
Example of an enhanced patent abstract

(57) **ABSTRACT**

A golf ball comprising a core, a cover, and an intermediate layer disposed between the core and the cover, wherein the intermediate layer comprises a non-ionomeric fluoropolymer having a formula:



wherein X_1 to X_{12} are hydrogen, fluorine, chlorine, bromine, iodine, CH_3, CF_3, linear or branched alkyl group, partially fluorinated or perfluorinated alkyl group, linear or branched alkoxy group, partially fluorinated or perfluorinated alkoxy group, aromatic, or alicyclic; at least one of X_1 to X_4 comprises a fluorine; m ranges from 100 to 1 percent by weight of the fluoropolymer; n ranges from 0 to 50 percent by weight of the fluoropolymer; and o ranges from 0 to 35 percent by weight of the fluoropolymer.

Additional sentences are added by CAS editorial staff that describe the composition of the golf ball's intermediate layer.

A **golf ball** **comprises** a core, a cover, and an intermediate layer disposed between the core and the cover, wherein the intermediate layer **comprises** a non-ionomeric fluoropolymer having a formula -[$CX^1(X^3)CX^2(X^4)$]-[$CX^5(X^7)CX^6(X^8)$]-[$CX^9(X)^{11}CX^{10}(X^{12})$]-; wherein X^1 to X^{12} are hydrogen, fluorine, chlorine, bromine, iodine, CH_3, CF_3, linear or branched alkyl group, partially fluorinated or perfluorinated alkyl group, linear or branched alkoxy group, partially fluorinated or perfluorinated alkoxy group, aromatic, or alicyclic; at least one of X^1 to X^4 **comprises** a fluorine; m ranges from 100 to 1 percent by weight of the fluoropolymer; n ranges from 0 to 50 percent by weight of the fluoropolymer; and o ranges from 0 to 35 percent by weight of the fluoropolymer. Thus, a composition of the an intermediate layer of a **golf ball** contains Kynar Flex 2900-04 (hexafluoropropylene-vinylidene fluoride copolymer). The intermediate layer was molded over a polybutadiene core to give a **golf ball** with an ATTI compression of 80, and a COR at 125 ft/s 0f 0.795, and water absorption <0.05%.

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Substances indexed in SciFinder^n records

- SciFinder^n covers characterized substances identified in all patents
  - Claimed & exemplified substances with supporting data

- In addition, SciFinder^n covers items identified in the Examples section of patents
  - Exemplified prophetic substances - specific but uncharacterized substances (e.g., reactants, isolated intermediates, products) identified by chemical name or structure, including structures displayed in a table
  - Exemplified prophetic uses - novel but unsubstantiated uses of known substances

https://www.cas.org/support/documentation/chemical-substances/prophetics

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Determining if a substance is prophetic

Example IV Synthesis of
α-Glutamyl-L-Se-methylselenocysteine

[0069] Steps similar to the ones as discussed in Example III were followed for the synthesis of Synthesis of α-Glutamyl-L-Se-methylselenocysteine.

- ☑ **Specific substance in Example section?**
- ☑ **Chemical name or structure provided?**
- ☑ **No characterization provided?**
- ☑ **Does not appear in Claims?**

→ **CAS prophetic substance (prior art)**

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Live Demo 2: Searching for compounds from patents in SciFinder^n

- Substance identifier/Structure
- Chemscape Analysis
- Patent number

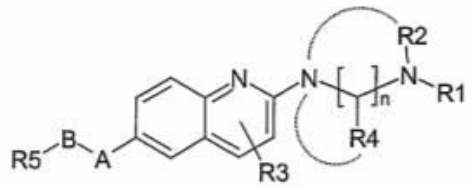
Example:

1. Find patents on chloroquine.
2. Chemscape analysis on
   - Compounds similar to chloroquine
   - Polyimide polymers
3. Find compounds from patent US20090061096

Markush structures in Patents

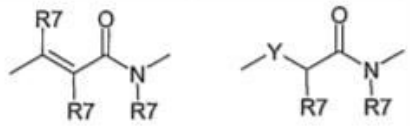
- Many chemical patents define their chemical structures as a broad generic structure, called a Markush formula
  - After Dr. Eugene Markush who was the first to get a patent based on a generic structure in 1924
  - The Markush formula may represent thousands of theoretical possible structures
- The Editorial staff at CAS only register and index specific substances mentioned in the claims and the examples of the patent in the CAS REGISTRY℠ file
- The Markush search option in SciFinder^{n} searches a special database from CAS (MARPAT®) if your structure could match a theoretical fit with the definition of the Markush formula of the patent

1. Use of a compound with the following structure (Formula 1a)



wherein the quinoline moiety may contain more than one nitrogen atom such as, e.g. 2 or 3 nitrogen atoms,

and wherein -A- is a linker, which is selected from the group consisting of



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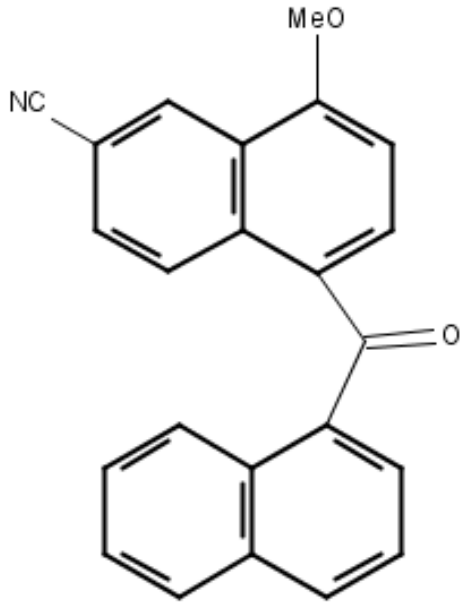
Live Demo 3: SciFinder^{n} Markush search

- Has the following compound been described in the literature or patents?
- If not, is it a novel compound?
- Do I have a Freedom to Operate for this substance?



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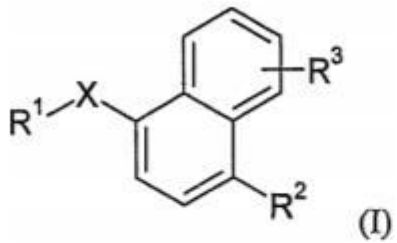
SciFinder^n Markush search

The present invention is directed to the use of compounds of formula I



(I)

wherein X is -S-, -S(O)-, -S(O)$_2$-, -S(O)$_2$NH-, -P(O)(OCH$_3$)-, -P(O)(OH)-, - NH-, -N(CH$_3$)-, -NHC(O)NH-, C(O)-, -C(O)O-, -NHC(O)-, -CH(OH)-, -CH=N-, -CH=CH-, -CH$_2$NH- or C(=NH)-;

R^1 is aryl or heteroaryl;

R^2 is hydrogen, OR^4 or NR^5R^6;

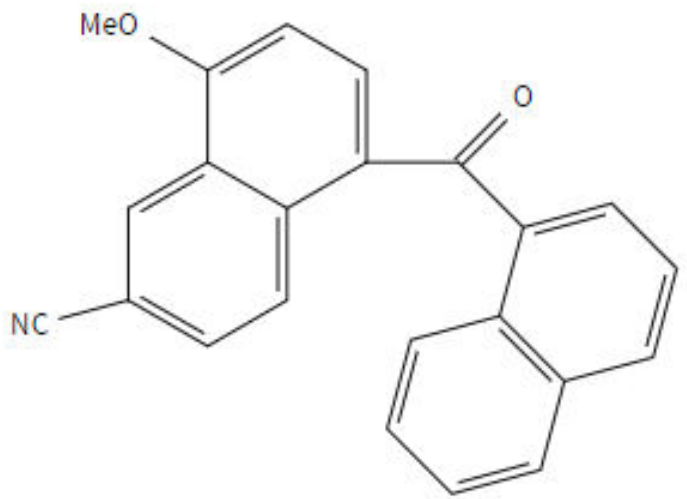
R^4 is C_1-C_8 alkyl or C_2-C_8 alkenyl;

R^5 and R^6 independently are hydrogen, C_1-C_8 al

R^3 is hydrogen, cyano, heteroaryl, heterocycloa

Aryl or heteroaryl is to be understood to include a six membered ring or a bicycle consisting of two condensed six-membered rings or one six-membered and one five-membered ring, wherein one or more C atoms may be replaced, independently of one another, by an atom selected from the group consisting of oxygen, nitrogen and sulfur. Examples include C_6-C_{10} aryl, C_1-C_9 heteroaryl, and C_6 aryl condensed to a five or six membered aliphatic or heteroaliphatic ring, e.g. naphthyl, 1,2,3,4-tetrahydronaphthalenyl,

WO2005058292



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