Intellectual Property (IP)

Where the world of ideas and innovation meets the “THE LAW” and RIGHTS and PROPERTY and OWNERSHIP and sometimes … MONEY.

- **Patents** protects a product or process
- **Trademarks** and Service Marks protect identity
- **Copyrights** protect expression
- **Trade Secrets** protect secret information, often “know how”
Legal Basis for IP Rights

• U.S Constitution, Article I, Sec. 8
  The Congress shall have the power to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

• Laws, Regulations & Guidance
  o Regulations: 37 C.F.R. Chapter I, Subchapter A
Legal Basis for IP Rights (Cont’d)

Patents

Trademarks
• State Law and Common Law
• Federal Law: 15 U.S.C. §§ 1051 et seq. (The Lanham Act);

Copyrights

Trade secrets
• State Law and Common Law
• Federal law: Economic Espionage Act (EEA)
What is an Invention?

• An Invention consists of a complete and workable idea (“Conception”) that can be proven to work (“Reduced to Practice”) for at least one useful purpose.

• In other words:

> An Invention is an idea that can be put to work.

• The IP law is public policy to protect and to encourage inventions
What Is A Patent?

• Patents provide legal protection for “INVENTIONS” and some discoveries for a limited time.

• The legal right granted by the Government to exclude others from:
  - making,
  - using,
  - selling,
  - offering to sell, or
  - importing, or offering to import, a patented item

• A patent does not grant an affirmative right
  - Does not give the inventor the right to make and sell his invention, just prevent others from doing so
Non-Affirmative Rights

Example

Company 1’s patent

A + B + C + D

Company 2’s patent

Company 2 can exclude others from using A+B+C+D

It is possible to obtain a patent that you cannot practice without infringing another’s patent. Here, Company 2 must license A+B+C to use A+B+C+D
Three Types of Patents

• Utility patents
  o Protects function, method, or composition
  o Provisional and Conventional (Non-Provisional)

• Design patents
  o Protects only the ornamental appearance
  o Example: the case design of a pager

• Plant patents
  o Plants that do not propagate by seed, such as new rose varieties
# Patent Summary

<table>
<thead>
<tr>
<th>What may be protected</th>
<th>Process, machine, manufacture or composition of material; plants; designs</th>
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<tr>
<td>Protection provided</td>
<td>May prevent others from making, using, selling, offering for sale and importing</td>
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<td>How to obtain protection</td>
<td>Application process through US Patent &amp; Trademark Office</td>
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<td>Duration</td>
<td>Utility/Plant Patent—20 years from filing</td>
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What Can Be Patented?

• Any new and useful: (UConn examples)
  o Process (to clean up contaminated soil)
  o Method (to make freeze-dried Factor VIII)
  o Machine (medical imaging system)
  o Manufacture (orthodontic wires)
  o Composition of matter (shape memory polymer, anti-fungal drug, DNA variant)

• Any new and useful improvement of the above
Examples

Gadget: Tick Remover
[Invented & made in Connecticut]
Example: Device

A rotationally oscillating injector – N Olgac [UConn]
Example: Process or a Method

Method to detect faults in power cables – by M Mashikian, R Bansal et al [UConn]
IMCROP

Method to remediate TCEs, PCEs, etc from soil – by G Hoag [UConn]
FMC CORP
Example: Composition or a New Material.

Fiber-reinforced dental materials by Goldberg & Burstone [UCHC] SYBRON

Novel electrochromic materials by G Sotzing [UConn] ALPHACHROMICS
Who May Apply For A Patent?

With very few exceptions, an application must be made, or authorized to be made, by and signed by the inventor(s)

- Inventor(s)
- Registered Patent Attorney
- Registered Patent Agent
  - not a lawyer, so can’t represent you in court, but has passed the Patent Bar Exam and can file & prosecute patent applications
Who can be an inventor on a patent?

Girls and Boys
[From Connecticut Invention Convention]

Even a President
[US Patent # 6,469]
Who can be an Inventor?

- Defined by Patent Law
- Inventors must contribute to the novel concepts of an invention
- Inventors must be linked to specific claims
- Inventors are NOT:
  - those who carry out routine work
  - those who pose a problem
  - those who provide funding or lab
- If listed inventors are deceptively and intentionally in error, it can cause an ultimately issued patent to be held invalid and unenforceable
- Keep good written/electronic records – for many reasons!!
What makes an Invention Patentable?

Invention must be:

• **Novel**
  - Cannot be known or used by others, described in publication, patented, sold or offered for sale

• **Non-obviousness**
  - Cannot be obvious to one of ordinary skill in the field of the invention

• **Useful** (for Utility patents)

• **Ornamental** (for Design patents)
Novelty

Invention cannot be:

• Publicly known or used by others in U.S. before the invention date
• Patented or described in printed publication anywhere before the invention date
• Patented or described in printed publication anywhere more than one year prior to U.S. application date
• In public use in U.S. more than one year prior to U.S. application date
Novelty (continued)

Invention cannot be:

- On sale in U.S. more than one year prior to U.S. application date
- Abandoned (invention development stopped)
- Described in a later issued patent whose application date was before the applicant’s invention date
- Invented by another but claimed by the applicant
- Made by another in the U.S. before the applicant’s invention date
Non-Obviousness

The subject matter of the invention as a whole must not be obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter of the invention pertains.

**Graham Factors**

*Obviousness should look at:*
- the scope and content of the prior art;
- the level of ordinary skill in the art;
- the differences between the claimed invention and the prior art; and

*Non-obviousness should look at:*
- commercial success;
- long-felt but unsolved needs; and
- failure of others.
Process to seek US Patent

- Do a preliminary Patentability Search (optional).
- File “Provisional” patent application w/ PTO. $$
  - Optional, but is often much cheaper and can buy some time to look into the market, or refine invention
- Within 12 months, write and file a “Non-Provisional” (regular) utility patent application. $$$$$
- WAIT …. WAIT …. WAIT …. (often 2 years!)
- PTO Examiner sends Office Action (OA).
- Attorney, Inventor(s) & OED review OA & collaborate to prepare Response. $$$
- Repeat until issued, appealed or dropped. $$
A Patent Contains:

- Inventors
- Owners
- References
- Abstract
- Figures/Pictures
- Detailed scientific description, the “specification”

United States Patent

Zhu

COMBINED ULTRASOUND AND NEAR INFRARED DIFFUSED LIGHT IMAGING SYSTEM

Inventor: Qing Zhu, Mansfield Center, CT (US)
Assignee: The University of Connecticut, Storrs, CT (US)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

Appl. No.: 09/565,508
Filed: May 5, 2000

Related U.S. Application Data

Provisional application No. 60/132,547, filed on May 5, 1999

Int. Cl. 7 A61B 5/00

U.S. Cl. 660/443

Field of Search 660/477, 407, 440/443, 447, 448, 438

References Cited

U.S. PATENT DOCUMENTS


5,990,836 * 12/1999 Nelson et al. 660/407

Primary Examiner—Marvin M. Lateef
Assistant Examiner—Maulin Patel
Attorney, Agent, or Firm—Canter Colburn LLP

ABSTRACT

A combined ultrasound and near infrared (NIR) diffused light imaging system includes a combined ultrasound and NIR light probe operatively connected to an ultrasound imaging system and an NIR diffused light imaging system. The combined ultrasound and NIR light probe comprises ultrasound transducer elements distributed in a rectangular matrix. Each element works in pulse-echo mode to provide spatial images of tissue at various depths. The opthalmic system includes laser diode light sources and photomultiplier tube detectors. Measurement can be done at multiple source-detector positions to develop image-reconstruction schemes to determine absorption and scattering coefficients as well as oxygen and blood concentration of the tissue volume at various slice depths. A display device provides co-registration of acoustic and optical images output by the ultrasound and NIR diffused light imaging systems.

18 Claims, 5 Drawing Sheets

20 KHz narrowband filter

320

amp (two stages)

314

Mixer

316

140.020 MHz Sine-wave Generator

20 KHz narrowband filter

324

326

Mixer

20 KHz narrowband filter

324

326

A/D PC

106

8 PMT detectors

312

140 MHz Sine-wave Generator

309

12 couplers

306

12 source fibers

310 RF switch

121

10

16

patent

16

308

coupler or combiner

306

104

780 nm 830 nm

LD LD

306

104
Specification

• Determine the “essence” of the invention
• Provide as much information as possible that would be helpful in describing the invention, including a brief background of the technology, problems that exist, how the invention solves the problems
• The information provided must enable one skilled in the art to make the invention and the information must provide the “best mode” of doing so
• Inventors should be available to answer questions, provide additional information when necessary, and execute declarations and assignment forms
A Patent also contains “Claims”

[Think of fences around the technology.]

Example:
1. A method for making metal carbide powders comprising:
   • Providing a metal oxide and a carbon source;
   • Milling to form a milled powder; and
   • Annealing to form a metal carbide powder.
2. The method of Claim 1 wherein the oxide is an oxide of silicon, titanium, or zirconium.
3. The method of Claim 1 wherein the carbon source is graphite, coal or thermal black.
The Patent Application

A complete application includes:

• Specification and Claims
• PTO Cover Sheet or Application Data Sheet
• An oath or declaration
  o identifying each inventor
  o signed by each inventor
• Government filing fee
Prosecution Procedure For Application

1. Issuance of filing receipt

2. Examination of application by Patent & Trademark Office (PTO) Examiner

3. Issuance of Office Action
   1. Claims allowed
   2. Claims rejected
   3. Claims objected to
Prosecution Procedure (cont)

- Opportunity to Amend/Interview
- Reconsideration by Examiner
- If allowed
  - issuance of Notice of Allowance/Issue Fee Due
  - Patents can take five+ years from initial filing to issue.
- If remains rejected,
  - abandon
  - appeal
  - file continuation or continuation-in-part application
- Maintenance Fees
Patent Term

- Utility patent: 20 years from effective filing date (up to 21 years if based upon Provisional).
- Design patents - 14 years from the date of issue
- Plant patents - 20 years from the date of filing
- Patent Term Extensions based on USPTO delays
Granted Patents, Now what?

- Patent owners have the right, during the active term of the patent to:
  - Own the invention defined by the claims;
  - Sell or license some or all of their rights;
  - Rights exclude others from:
    - Making the patented invention
    - Using the patented invention
    - Selling the patented invention
    - Importing the patented invention

- PTO Requires FULL disclosure of invention.
Patent Family

• What is meant by the term patent family?
  o Provisional
  o Utility
  o Continuation
  o Continuation-in-part
  o Divisional

• **A patent family** is a set of patents to protect a single invention.
  o They have the same Priority date (first date filed)
  o Often can include variations, more detail, other uses of the invention
Specific Patent Considerations in the University Setting:

- **Entity Status & Accuracy of Assignment**
  - Did you form a company already?

- **Inventorship**
  - Who in the lab really invented, as opposed to just worked on carrying out research?

- **Ownership**
  - University ownership may vary depending on relationship to University / Typically:
    - Employee- university owns patent
    - Undergrad student- university may not own depending if used facilities and funding
    - Research graduate student- most likely university owns

- **Federal Rights**
  - Did a federal agency sponsor research?

- **Budgetary restraints**
"I want to talk about my research and publish it. Can we still seek a patent?"

Answer: YES!!!

- But the timing of presenting, publishing and patent filing must be very carefully coordinated between researchers and UConn’s technology transfer group.

Reason: The America Invents Act of 2011
The America Invents Act – signed by President Obama on September 16, 2011

• This act represents the most extensive changes to the US Patent System in 60 to 200 years.
• This is a change from “First to Invent” system to “First Inventor to File” system to be like most other countries.
• The broad public goals of the AIA are:
  • More $ and more secure $ for PTO
  • Higher quality patents to support US innovation and jobs
  • *** Major changes in definition of “PRIOR ART” to now include oral presentations and other publically known information anywhere

University of Connecticut
Timing for Patent Filing in US

• In the United States, with a weak and very narrow exception for inventors’ own disclosures, a patent application must be filed BEFORE any:
  o Public Use or Sale of the invention, or
  o “Publication”
    • A printed journal article or a book
    • A handout at a seminar or class
    • An on-line meeting abstract
    • A Poster presentation at a professional gathering
    • An e-journal paper, including an on-line “preview” paper
    • A magazine or newspaper story
    • A thesis once it is cataloged and accessible
    • A funded grant proposal to a federal agency
    • A web site, blog, Tweet, or online video, e.g., YouTube
Non-US Patents through the PCT Process:

PCT - an international patent law treaty providing a unified procedure for filing patent applications to protect inventions in each of its contracting states.

146 countries are in the PCT as June 18, 2012.
Foreign Patent Protection

• PCT
  1. A single filing of an international application is made with a Receiving Office (RO) in one language.
  2. It then results in a search performed by an International Searching Authority (ISA)
  3. A written opinion regarding the patentability of the invention
  4. Optionally followed by a preliminary examination
  5. Finally, it goes to the relevant national or regional authorities (you choose)

• Paris Convention – 1 year from earliest filing date to file foreign application in member country
• U.S. Patent provides rights in U.S. and Territories only
• Most foreign patent laws do not allow 1 year grace period for filing within 1 year of a public disclosure.
  o Therefore it becomes first to file, as opposed to first to invent
Timing for Patent Filing in under AIA in the US & in Nearly Other Countries of the World

- In nearly all countries, patent applications are best filed BEFORE any:
  - Publication
  - Public seminar
  - Conference talk
  - Other “open” oral discussion/exchange
Non-US Patents may be pursued through the PCT Process: 144 countries are in the PCT.
What is a Trademark?

• Word, name, symbol, or device that identifies the source of goods or services
  o Single source
  o Quality assurance function

• Protects against likelihood of confusion

• Rights are based on use or registration

• State or federal registrations
# Trademarks Summary

<table>
<thead>
<tr>
<th>What may be protected</th>
<th>Words, phrases or logos used for Trademark (tangible goods) or Service Mark (services) or Trade Dress visual appearance of packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection provided</td>
<td>May prevent others from using mark in commerce</td>
</tr>
<tr>
<td>How to obtain protection</td>
<td>Common law protection through use; registration process through State and/or Federal agencies</td>
</tr>
<tr>
<td>Duration</td>
<td>Unlimited until abandoned; Federal registrations must be renewed</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Infringement suit in State or Federal Court</td>
</tr>
</tbody>
</table>
Trademark Tips

• Before using a word, name, or slogan, ask for a trademark search
  o Identify the risk associated with using the word, name, or slogan
  o Can do it yourself on USPTO’s website

• Before adopting a new mark for a product or service, get protection
  o Make sure you are not infringing another entity’s mark
  o Protect your mark before publicizing it by filing an intent-to-use federal trademark application

• You can use the symbol™ before it is registered®
Trademarks Must Be Defended

When you use “Xerox” the way you use “aspirin,” we get a headache.

Boy, what a headache! And all because some of you may be using our name in a generic manner. Which could cause it to lose its trademark status the way the name “aspirin” did years ago. So when you do use our name, please use it as an adjective to identify our products and services, e.g., Xerox copiers. Never as a verb: “to Xerox” in place of “to copy,” or as a noun: “Xeroxes” in place of “copies.” Thank you. Now, could you excuse us, we’ve got to lie down for a few minutes.

THE DOCUMENT COMPANY
XEROX
Copyright

• Protects the expression of an idea in a tangible form, not the idea itself
• Protects against copying, not against independent development of an identical work
• Copyright protection occurs automatically once the original work is fixed in a tangible medium
• Registration of the copyright is NOT required for protection (but it may be required to sue for infringement).
Copyright

Under the “Work Made for Hire Doctrine”:

• The employer AUTOMATICALLY owns the copyright for work product created by an employee within the scope of his or her employment

• The employer does NOT own the copyright for work product created by an independent contractor . . .

• unless the contractor assigns the copyright in writing
Trade Secrets Definition

“Information, without regard to form (any formula, pattern, physical device, idea, process, compilation of information or virtually any other information that), that:

1. is not commonly known or available to the public;
2. derives economic value from not being generally known; and
3. is the subject of reasonable efforts to maintain its secrecy.”
Limitations of Trade Secrets

- Does not protect against reverse engineering
- Does not apply to independent creation
- Public disclosure ends trade secret protection
- Not suitable where the distinctive technology or idea is disclosed when the product/system is sold/public
- Trade secrets must be maintained as a secret.
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