Commercialising Research: Making Technology Work

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Materials Dept Graduate Induction Day 5th Oct 2020
Oxford University Innovations (OUI)

Who we are

- [https://innovation.ox.ac.uk/about/people/chu-chim/](https://innovation.ox.ac.uk/about/people/chu-chim/)
- **Beyond learning and teaching**: what can Oxford do for Society at large from its research outcomes?
- **OUI** is company 100% owned by the University of Oxford
- **We are Intellectual Property (IP)**
  - Protecting, developing and exploiting IP
- **We are Technology Transfer: Providing a business service to University of Oxford**
  - Handles Intellectual Property (Patents, Know-how)
  - Licences to Industry
  - Creates Spin-out companies
  - Facilitates Proof of Concept technology development
What is Intellectual Property?

- **What is IP?**
  - Published and protected: Patents, trademarks, drawings, design rights...
  - Keep as trade secrets: Know-how comprising recipes/formulae/data, process specs, test specs, models/simulations, customer lists, supplier lists...

- **Who creates IP?**
  - Research team members singularly or collectively
  - Principal Investigators and DPhil Students; many examples in Mat Dept

- **What does IP look like?**
  - An example patent as used in Space Satellite follows....

- **How useful is IP to the Developer and the End-user?**
  - Technology Readiness Level: TRL definitions follows....
Example IP: A USA Granted Patent

United States Patent

Dadd et al.

SPRINGS AND SPRING ASSEMBLIES

Inventors: Michael William Dadd, Summertown (GB); Paul Brian Bailey, Summertown (GB)

Assignee: Isis Innovation Limited, Summertown, Oxford (GB)

Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 213 days.

Appl. No.: 13/881,434
PCT Filed: Jun. 3, 2010
PCT No.: PCT/GB2010/001100
§ 371 (c)(1), (2), (4) Date: Mar. 16, 2012
PCT Pub. No.: WO2011/001132
PCT Pub. Date: Jan. 6, 2011

Prior Publication Data

Foreign Application Priority Data
Jul. 3, 2009 (GB) 0911629.4

Int. Cl.
F01B 31/00 (2006.01)
F16F 1/02 (2006.01)

Patent No.: US 9,234,554 B2
Date of Patent: Jan. 12, 2016

USPC .............................. 267/160, 161, 162
See application file for complete search history.

References Cited

U.S. PATENT DOCUMENTS

3,312,125 A * 4/1967 Darouichous .............. 74/570.1
4,290,851 A * 10/1981 Pierce ................. 192/84.94

FOREIGN PATENT DOCUMENTS

DE 10312977 A1 10/2004
GB 1446729 A 8/1976

OTHER PUBLICATIONS


Primary Examiner — Xuan Lan Nguyen
Attorney, Agent, or Firm — Bell & Manning, LLC

ABSTRACT

Various arrangements are disclosed based on springs formed from a plurality of individual resilient arms, including a spring having a substantially planar form in an unloaded state and rotational symmetry of at least order two about a symmetry axis perpendicular to the plane of the spring, the spring comprising: an inner hub and an outer hub, the inner hub being radially inward with respect to the outer hub; a plurality of resilient connecting arms each connected at an inner end to the inner hub and at an outer end to the outer hub, the plurality
Oxford University Innovations (OUI)
What we do

• **Exploit the IP and underpinning technology**
  - **License** the patents/know-how to a third party able/willing to exploit the IP
    - eg. Honeywell – Northrop Grumman (Cryocoolers for Space Satellite Instruments)
  - **Mature the TRL**
    - Make the IP/technology more attractive for adoption by industry: Further research to embody the IP/technology as demonstrations
    - Improve the IP/technology under a development programme as a Proof of Concept

• **Make Impact**: Make new Oxford technologies work for society
• **Add value**: Collaborating with Industry Partners
• **Business/Industry Engagement** is vital
Technology Readiness Level
Original Definition from NASA

NASA/DOD Technology Readiness Level

- **TRL 1**: Basic principles observed and reported
- **TRL 2**: Technology concept and/or application formulated
- **TRL 3**: Analytical and experimental critical function and/or characteristic proof-of-concept
- **TRL 4**: Component and/or breadboard validation in laboratory environment
- **TRL 5**: System/subsystem model or prototype demonstration in a relevant environment (Ground or Space)
- **TRL 6**: System prototype demonstration in a space environment
- **TRL 7**: Actual system completed and “flight qualified” through test and demonstration (Ground or Flight)
- **TRL 8**: Actual system “flight proven” through successful mission operations
Technology Readiness Level
How it fits into Industry

ETI is central in the Energy Innovation Chain ..... 

Technology push & knowledge transfer... 

... market pull & public policy 

TRL = Technology Readiness Level. Images are for illustration of TRL definitions and are ETI assumed TRL status of a range of marine devices at early 2008.
Examples of Intellectual Property: Chemistry Dept

- **Dendrimer Sensors: Arborescent Ltd**

- **Dendrimer/OLED Displays: Sumitomo Corp**

(12) United States Patent
Bourn et al.

(45) Date of Patent: 8 Dec. 15, 2009

(54) ARYL-ARYL DENDRIMERS

(75) Inventors: Paul Leslie Burn, Oxford (GB); Hor David Samuel, North Hough (GB); Shi-Chun Liu, Oxford (GB)

(73) Assignees: Isis Innovation Limited, Oxford (GB); The University Court of the University of St. Andrews, Fife (GB)

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Examples of Intellectual Property: Materials Dept

- Graphene, Carbon Nanotubes, CVD Probe
- Buckyballs
- 3D Atom Probe
Examples of Intellectual Property: Engineering Dept

• **Crycoolers for Space.** Next is a very cold 7 K cryocooler for cooling the JW mid-infrared detector

• **19 Satellites so far**

**JW is the** James Webb Space Telescope: Northrop Grumman. Launch due now in 2021, NASA’s James Space Telescope - “the most powerful infrared space telescope ever built and will observe the most distant objects in the universe, provide images of the first galaxies formed, and study unexplored planets around distant stars”
THANK YOU

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