UNSW School of Photovoltaic and Renewable Energy Engineering

IP overview

Eddie Walker, FB Rice
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Acknowledgement of Country

We acknowledge the Traditional Custodians of country throughout Australia and their connections to land, sea and community.

We pay our respect to their Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples today.
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FB Rice team UNSW

Eddie Walker
Partner

Connie Merlino
Partner

Steve Gledhill
Partner

Rachel Hooke
Partner

Charles Yip
Partner

John Hogan
Partner

David Loch
Partner

Andrew Gregory
Partner

Sarah Glasson
Senior Associate

Desma Grice
Senior Associate

Dan Holt
Senior Overseas
Patent Attorney

Michelle Catto
Associate

Daniel Pullella
Associate

Rowena Wilson
Associate

Kate Baumann
Associate
Champion innovation and create value
Types of IP
Intellectual property

“creations of the mind”

“products of human intelligence and creation”

“intangible property that is the result of creativity”
Types of intellectual property

Registrable
- Patents
- Trade marks
- Registered designs

Non-Registrable
- Copyright
- Trade secrets
Registered designs

- Protect the visual appearance of a product
- Design must be *new* and *distinctive* at the time of filing
- Lasts between 10-25 years depending on country
Trade marks

Any element (sign) used to distinguish your products/services from those of a competitor:

- Words
- Devices, logos
- Packaging, labels, getup
- Taglines
- Sounds, smells, colours, shapes

BECAUSE YOU’RE WORTH IT
Copyright

- Protects the copying of an author’s creative output
- Drawings, art, music, literature, computer programs, typographical arrangements, journal articles
- Only infringed if you can prove copying of a substantial part of the work

Bifacial and Semitransparent Sb$_2$(S,Se)$_3$ Solar Cells for Single-Junction and Tandem Photovoltaic Applications

Chen Qian, Kaishen Sun, Xinlin Gong, Hailin Cai, Jiashan Huang, Caixia Li, Rui Cao, Zheng Liu, Martin Green, Bram Hoex, Tao Chen, and Xiaoqiang Hao

This-bifilm solar cells are expected to play a significant role in the space industry, building-integrated photovoltaic (BIPV), indoor applications, and tandem solar cells, where bifaciality and semitransparency are highly desired. Sb$_2$(S,Se)$_3$ has emerged as a promising new photovoltaic (PV) material for its high absorption coefficient, tunable bandgap, and nontoxic and earth-abundant constituent. However, high-efficiency Sb$_2$(S,Se)$_3$ solar cells exclusively employ monofacial architectures, leaving a considerable gap toward large-scale application in aforementioned fields. Hence, a bifacial and semitransparent Sb$_2$(S,Se)$_3$ solar cell and its extended application in tandem solar cells are reported. The transparent conductive oxide (TCO) and the ultrathin inter-n–n$^+$-p structure provide high long-wavelength transmittance. Despite the low TCO Schottky junction, power conversion efficiency (PCEs) of 7.4%, and 6.3% are achieved with front and rear illumination, respectively, contributing to a great bifaciality of 0.84. Consequently, the reported device gains great enhancement in PV performance by exploiting broad of illuminations and shows exceptional capability in absorbing tilt incident light. Moreover, on Sb$_2$(S,Se)$_3$/Silicon solar cell with a PCE of 11.6% is achieved in preliminary trials. These exciting findings imply that bifacial and semitransparent Sb$_2$(S,Se)$_3$ solar cells possess tremendous potential in practical applications based on their unique characteristics.
Trade secrets

- Company policies, non-disclosure agreements
Patents
Patents

- A patent is a right that is granted for something that is new, inventive, and useful
- Lasts up to 20 years from filing

Protects, for example:
- Systems
- Manufacturing processes
- New devices

Things that are “technical” Things that produce an “Artificial State of Affairs”
Patentable subject matter

What kind of things are not patentable?
- Human beings or the biological process for their generation
- Artistic creations
- Discoveries with no means of putting them into effect
- Abstract ideas, schemes or plans
Methods of treatment and diagnosis

- Many countries do not allow methods of treatment or diagnosis, which involve one or more steps carried out on a human, to be patented.
- Have to rely on protection for apparatus/device features only
Software inventions

- Computer programs as such are generally excluded from patentability
- But if the substance of the invention is something significantly more than computerisation of an abstract idea then a patent may be granted
Software inventions
Structure of a patent

- Title
- Background – problem being addressed/ prior art
- Summary
- Detailed description - working of the invention
- Claims – scope of protection
- Drawings – of the proposed system and results
- Abstract
Novelty and inventive step

For a patent to be granted, the invention as defined in the claims must be:
- New (novel)
- Non obvious (possess inventive step)
- Assessed in light of the ‘prior art’
Examples of prior art

- Earlier patent documents
- Journals, books and other publications
- Information on the internet
- Disclosures during public meetings and conferences
Keep things secret!

- You shouldn’t talk about new developments to any third parties until you have considered the IP position
- If in doubt, talk to Knowledge Exchange
Patent process
Patent rights and limitations
True or false?

If you have a patent that covers your product you are free to exploit your product
True or false?

If someone has a patent that your product would infringe, you can’t get your own patent for your product.
Patent rights – an example

Apple has invented the “Touch ID fingerprint scanner” and patented its invention.

A startup has invented the “Touch ID health monitor”, which allows a person’s health to be analysed wherever they use a fingerprint scanner.

- The start up may be able to get a patent for the new invention (because the new health monitoring technology is new and not obvious).

- But they cannot exploit the technology without permission from Apple as they rely on Apple’s broad specific scanning technology to implement their invention.
Patent rights - limitations

- A patent gives the right to exclude others from making, selling, using, importing etc. an invention as claimed in the patent
- A patent does NOT give a right to exploit the invention – check existing patent rights to determine whether there is freedom to exploit an invention
- A patent does NOT prevent others from getting a patent, if there is also something new and inventive about their product
Patent searching
Types of patent searches – Novelty search

- Also called a patentability search
- Identify what aspects of an invention are new
- Helps understand the likelihood of a patent application
- May also be used as a basis for contesting the validity of someone else’s patent
Types of patent searches – Infringement search

- Also called a Freedom-to-Operate (FTO) or clearance search
- Identify what aspects of a product or process might infringe the patents of others
- The search does not necessarily focus on inventive aspects of the product or process
# Novelty search vs infringement search

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<thead>
<tr>
<th></th>
<th>Novelty search</th>
<th>Infringement search</th>
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<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Determine whether technology could be patentable</td>
<td>Determine whether technology could infringe the IP rights of others</td>
</tr>
<tr>
<td><strong>When to action</strong></td>
<td>Before or at early stage of patent application process</td>
<td>At any stage during product development</td>
</tr>
<tr>
<td><strong>Technical focus</strong></td>
<td>Any aspects of the technology considered unique</td>
<td>Any aspects of the technology, including manufacturing processes</td>
</tr>
<tr>
<td><strong>Document focus</strong></td>
<td>Any published documents, including patents, journals, web articles, etc.</td>
<td>Granted and pending patents only</td>
</tr>
<tr>
<td><strong>Geographical focus</strong></td>
<td>Anywhere in the world</td>
<td>Countries of commercial interest</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>Lower</td>
<td>Higher</td>
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Inventorship and ownership
Why do we care about inventorship?

- Inventors are the first owners of an invention
- Agreements are established to transfer ownership from inventors to other parties
Identifying inventive contribution

Australia:
- Did a person’s contribution have a material effect?
- Would the invention have come about without the person’s contribution?

Not an inventor if:
- Merely following instructions
- Performing routine work
- Constructing a product to another person’s design
- Only a figurehead
Who owns the invention?

Depends on agreements put in place between the inventors and one or more parties:

- Contract of employment
- Consultancy agreement
- IP-specific assignment

Companies and research institutes take steps to ensure that, if appropriate, they own the technology and inventions that are developed by employees, consultants, third parties.
Why does UNSW protect IP and what is the approach?
True or false?

A patent is worthwhile only if you can afford to take big companies to court
Why have IP?

IP is a property that can:
- prevent or deter infringement or theft by others
- be sold or licensed to partners
- form the basis of a start-up/spinout
- help securing investment and funding
UNSW IP Management Process

DISCLOSE → REVIEW → PROTECT → COMMERCIALISE
UNSW Pathways for Commercialisation

Based on UNSW developed technology/IP
Supported by KE

- Licence to an established company
- Spinout company
- Staff spinout company (staff founder)
- Start-up

Supported by UNSW Founders

Student/Alumni
No UNSW technology
Establishing a Staff Spinout

The BDM introduces you to a Founders Program Manager within UNSW Entrepreneurship who can provide support through all stages of the commercialisation journey. Including business idea validation, customer discovery, developing a go to market plan and composing an investor pitch.

1. You develop intellectual property with commercial value and would like to consider founding a company, i.e. a Staff Spinout.

2. You lodge the idea through the Knowledge Exchange (KE) inventor portal.

3. A Business Development Manager (BDM) from KE will meet with you to discuss your idea and commercial plans.

4. The BDM presents the idea and the commercial plan to the Technology Review Committee (TRC).

5. The TRC will review and decide on an IP strategy that would support the commercialisation plan/business plan.

6. You present the idea as an investor pitch to the Staff Spinout Review Committee (SSRC).

7. KE will confirm endorsement from your HOD/supervisor.

8. You seek investment, test the market, develop your business plan and establish the company.

9. Sign the template IP licence and SAFE.


11. You successfully commercialise technology!

For further information contact: KNOWLEDGE EXCHANGE | FOUNDERSTM
Summary

- Be aware of the different types of IP available and the value that protecting IP can bring to a project
- At every step and turn consider if you have come up with something that could or should be protected and discuss with Supervisors/Knowledge Exchange Team
- Don’t publicise technical details of your work before the IP position is considered
- Be aware of both novelty and freedom to operate issues and the types of searching that may be carried out
- Understand the importance of identifying correct inventorship and ownership
Any questions?
Eddie Walker
ewalker@fbrice.com.au