

Patent Search For Engineers and Lawyers
Prof. M. Padmavati
Rajiv Gandhi School of Intellectual Property Law
Indian Institute of Technology, Kharagpur

Lecture – 13
Hands on Patent Search (Contd.)

Welcome to the lecture, we will be today dealing with the practical aspects of keyword and classification search in relation to the chemical area. The chemical area belongs to the area of unpredictable arts. So, therefore, here you have a whole range of different aspects of invention compared to which different compared to the predictable area.

(Refer Slide Time: 00:48)

Practical Demonstration with Espacenet for Chemical Area

- Polyethylene Furanoate (PEF): PEF is a 100% recyclable bio-based polymer derived from plants having the potential to replace the plastic industry's giant polyethylene terephthalate (PET), which is a durable material derived from conventional resources.
- PEF is referred as the **next generation polyester**
- **PEF is produced** when furandicarboxylic acid (FDCA) is polymerized in presence of ethylene glycol. At the level of its manufacture, the synthetic route is similar to that of PET, the terephthalic acid being substituted by 2,5 furan dicarboxylic acid (FDCA).

2,5-furandicarboxylic acid + HO-CH₂-CH₂-OH → Polyethylene furanoate

One example that we will be taking up today with respect to the practical demonstration is polyethylene furanoate.

Let us understand a few details of this particular invention in terms of looking at the what are the inventions in this particular area. So, first of all what is polyethylene fluorine? Polythene furanoate it is a bio based polymer derived from plants and it is expected to be a great development, because it is recyclable and has the potential to make a big change in the entire plastic industry when compared to the conventional source of plastics. How is polyethylene furanoate produced is also important for us to understand.

The combination of furandicarboxylic acid in the presence of ethylene glycol leads to a polymerization step which leads to polyethylene furanoate. And so, the synthesis route is somewhat similar to that of polyethylene terephthalate. So, you understand the different chemical structures in this particular diagram that is provided here.

(Refer Slide Time: 02:18)



PEF offers numerous **benefits** such as:

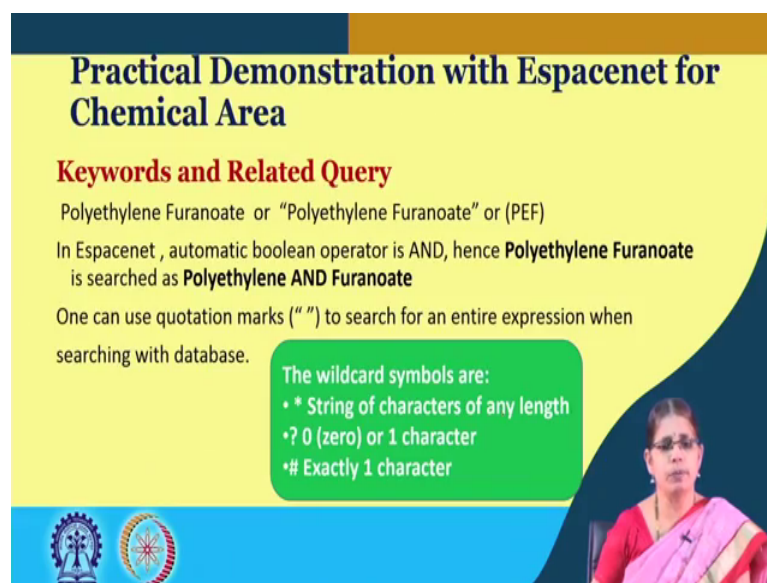
- Superior barrier performance as well as mechanical and thermal properties
- High glass transition temperature and lower melting point
- Recyclable and hence reduced carbon footprint
- Cost competitive at industrial scale

Application:

- PEF Bottles- Water bottle, beverage bottle etc
- PEF Fibers- Apparels, carpets, home furnishing, disposables commodities, fabrics, diapers, filters and industrial fibres
- PEF Films

So, PEF provides a numerous benefits, superior barrier performance in terms of its mechanical and thermal properties. It has a high glass transition temperature reduced carbon footprint because its recyclable and can be quite cost competitive when its actually taken up at the industrial scale. The application areas are; obviously, in relation to the bottling area where different bottles, in the fiber category which includes apparels carpets home furnishing disposables and also PEF can be actually made into different films. So, these are the different application areas possible.

(Refer Slide Time: 03:06)



Practical Demonstration with Espacenet for Chemical Area

Keywords and Related Query

Polyethylene Furanoate or "Polyethylene Furanoate" or (PEF)

In Espacenet , automatic boolean operator is AND, hence **Polyethylene Furanoate** is searched as **Polyethylene AND Furanoate**

One can use quotation marks (" ") to search for an entire expression when searching with database.

The wildcard symbols are:

- * String of characters of any length
- ? 0 (zero) or 1 character
- # Exactly 1 character

If you one is interested in looking at the different inventions in relation to polyethylene furanoate, one can undertake a keyword search. So, what are the different keywords that we would actually undertake in order to get the inventions in relation to polyethylene furanoate? So, one can use the keyword polyethylene furanoate encodes or also can use the abbreviation PEF.

Now, one needs to keep in mind that use of this abbreviation should be in relation to a specific area otherwise there could be other abbreviations which are also other terms which also could be abbreviated as PEF. So, it should be used in conjunction. Now if you looking at Espacenet and looking at a search one can also simply give the words polyethylene furanoate. So, what does it do? It has an automatic Boolean operator as AND so, it would combine them and provide you the search its.

Another good way of searching would be to use different wildcard symbols which are as providing a string of characters; you could provide a link with respect to hash tag or the question mark which provides the other kind of the wildcards and search for in the database.

(Refer Slide Time: 04:36)

Practical Demonstration with Espacenet for Chemical Area

Espacenet allows running a "Smart search" and is available at <https://worldwide.espacenet.com/>

Click on "Search" to get results to your query.

You can enter upto 20 search terms and combine them with the boolean operators AND, OR, NOT.

So, this is one instance where we are looking at the search using the smart search option available at the Espacenet. What is the advantage of this smart search option is that, this is very unique because it provides you a concept based search. So, you can actually provide a phrase in this particular window and carry out the search. Today almost up to 20 search terms can be given in this particular window to look out for the search.

(Refer Slide Time: 05:08)

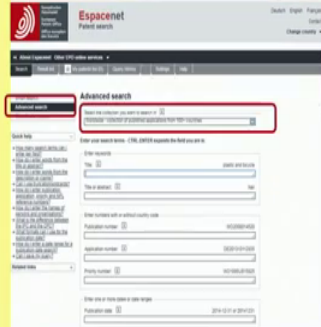
Practical Demonstration with Espacenet for Chemical Area

Click on "Search" to get results to your query.

(Refer Slide Time: 06:36)



Practical Demonstration with Espacenet for Chemical Area

Advanced search using Espacenet



The advanced search provides the possibility to combine different search terms in different fields.

- Title
- Title or abstract
- Publication number
- Priority number
- Publication date
- Applicant
- Inventor
- Cooperative Patent Classification (CPC)
- International Patent Classification (IPC)



There is also another option that is available at the Espacenet which is the advanced search option. In the advanced search option one can actually put in a whole lot of information where one can search for specific category of fields and combine them in order to get the search. So, therefore, what are the different fields that one can combine in? There are these different options that are available in relation to combining the fields. So, looking at another aspect of the search in relation to PEF let us look at the classification search in relation to this particular area.



(Refer Slide Time: 07:23)

Practical Demonstration with Espacenet for Chemical Area

How to use classification search

IPC
C08G-063/672: Dicarboxylic acids and dihydroxy compounds

CPC:
C07D-0307/68: Carbon atoms having three bonds to hetero atoms with at the most one bond to halogen



Generally this will belong to the C class and in the IPC this is the particular class which is dicarboxylic acid with dihydroxy compounds. If you look at the CPC, CPC list them under this particular code.

(Refer Slide Time: 07:47)

The screenshot shows the Espacenet Cooperative Patent Classification search interface. The search bar is empty. The classification list shows categories A through Y. A woman in a pink sari is visible in the bottom right corner of the slide.

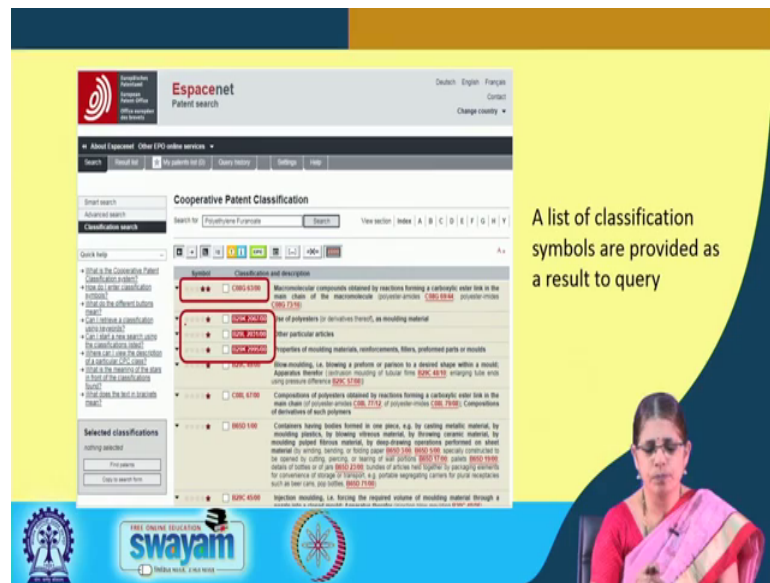
Let us recall back the CPC classification. So, here you have A to H and Y class. So, we are talking about C which is chemistry and metallurgy.

(Refer Slide Time: 08:04)

The screenshot shows the Espacenet Cooperative Patent Classification search interface. A red box highlights the search bar, and an arrow points to it with the text "Type keywords or classification symbols". A woman in a pink sari is visible in the bottom right corner of the slide.

So, one can actually type in the word polyethylene furanoate and simply search in the CPC search list.

(Refer Slide Time: 08:16)



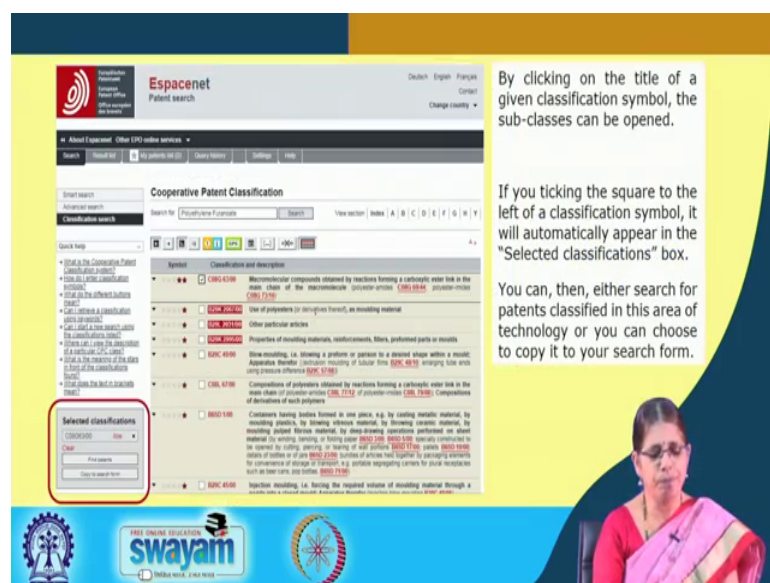
The screenshot shows the Espacenet Patent search interface. The search results are displayed under the heading "Cooperative Patent Classification". The results are organized into a table with columns for "Symbol" and "Classification and description". The following table represents the visible data:

Symbol	Classification and description
<input checked="" type="checkbox"/> C08G 63/08	Macromolecular compounds obtained by reactions forming a carbonic ester link in the main chain of the macromolecule (polyester-amine) C08G 63/04 (polyester-oxime) C08G 63/06
<input checked="" type="checkbox"/> C08L 27/02	Use of polyesters (or derivatives thereof), as moulding material
<input checked="" type="checkbox"/> C08L 27/04	Other particular articles
<input checked="" type="checkbox"/> C08L 27/06	Properties of moulding materials, reinforcements, fillers, preformed parts or moulds
<input checked="" type="checkbox"/> B29C 47/00	Sheet moulding, i.e. blowing a preform or parison to a desired shape within a mould; Apparatus therefor (continuous moulding of tubular forms B29C 47/02 ; extruding tube ends using pressure differences B29C 47/04)
<input checked="" type="checkbox"/> B29D 1/00	Containers having bodies formed in one piece, e.g. by casting metallic material, by moulding plastic material, by blowing viscous material, by drawing viscous material, by moulding pulsed fibrous material, by deep-drawing operations performed on sheet material (by extruding, casting, or blowing B29D 1/02 ; B29D 1/04 ; extruding into or against a fluid medium B29D 1/06 ; extruding of articles B29D 1/08 ; extruding of articles B29D 1/10 ; extruding of articles B29D 1/12 ; extruding of articles B29D 1/14 ; extruding of articles B29D 1/16 ; extruding of articles B29D 1/18 ; extruding of articles B29D 1/20 ; extruding of articles B29D 1/22 ; extruding of articles B29D 1/24 ; extruding of articles B29D 1/26 ; extruding of articles B29D 1/28 ; extruding of articles B29D 1/30 ; extruding of articles B29D 1/32 ; extruding of articles B29D 1/34 ; extruding of articles B29D 1/36 ; extruding of articles B29D 1/38 ; extruding of articles B29D 1/40 ; extruding of articles B29D 1/42 ; extruding of articles B29D 1/44 ; extruding of articles B29D 1/46 ; extruding of articles B29D 1/48 ; extruding of articles B29D 1/50 ; extruding of articles B29D 1/52 ; extruding of articles B29D 1/54 ; extruding of articles B29D 1/56 ; extruding of articles B29D 1/58 ; extruding of articles B29D 1/60 ; extruding of articles B29D 1/62 ; extruding of articles B29D 1/64 ; extruding of articles B29D 1/66 ; extruding of articles B29D 1/68 ; extruding of articles B29D 1/70 ; extruding of articles B29D 1/72 ; extruding of articles B29D 1/74 ; extruding of articles B29D 1/76 ; extruding of articles B29D 1/78 ; extruding of articles B29D 1/80 ; extruding of articles B29D 1/82 ; extruding of articles B29D 1/84 ; extruding of articles B29D 1/86 ; extruding of articles B29D 1/88 ; extruding of articles B29D 1/90 ; extruding of articles B29D 1/92 ; extruding of articles B29D 1/94 ; extruding of articles B29D 1/96 ; extruding of articles B29D 1/98 ; extruding of articles B29D 1/100)
<input checked="" type="checkbox"/> B29C 47/00	Injection moulding, i.e. forcing the required volume of moulding material through a nozzle into a mould cavity; Apparatus therefor (continuous moulding of articles B29C 47/02 ; extruding tube ends using pressure differences B29C 47/04)

A list of classification symbols are provided as a result to query.

This is the list of hits that you get when you search under the CPC. The classification codes are represented and against that you also get the description of that particular field. So, what does this give you? This gives you actually the entire implementation of the invention in the various ways. And if you look at individual classes you can get actually the data in relation to patents belonging to specific to that particular invention whether they are compositions or they are actually materials in relation to use of that particular invention.

(Refer Slide Time: 08:58)



The screenshot shows the Espacenet Patent search interface. The search results are displayed under the heading "Cooperative Patent Classification". The results are organized into a table with columns for "Symbol" and "Classification and description". The following table represents the visible data:

Symbol	Classification and description
<input checked="" type="checkbox"/> C08G 63/08	Macromolecular compounds obtained by reactions forming a carbonic ester link in the main chain of the macromolecule (polyester-amine) C08G 63/04 (polyester-oxime) C08G 63/06
<input checked="" type="checkbox"/> C08L 27/02	Use of polyesters (or derivatives thereof), as moulding material
<input checked="" type="checkbox"/> C08L 27/04	Other particular articles
<input checked="" type="checkbox"/> C08L 27/06	Properties of moulding materials, reinforcements, fillers, preformed parts or moulds
<input checked="" type="checkbox"/> B29C 47/00	Sheet moulding, i.e. blowing a preform or parison to a desired shape within a mould; Apparatus therefor (continuous moulding of tubular forms B29C 47/02 ; extruding tube ends using pressure differences B29C 47/04)
<input checked="" type="checkbox"/> B29D 1/00	Containers having bodies formed in one piece, e.g. by casting metallic material, by moulding plastic material, by blowing viscous material, by drawing viscous material, by moulding pulsed fibrous material, by deep-drawing operations performed on sheet material (by extruding, casting, or blowing B29D 1/02 ; B29D 1/04 ; extruding into or against a fluid medium B29D 1/06 ; extruding of articles B29D 1/08 ; extruding of articles B29D 1/10 ; extruding of articles B29D 1/12 ; extruding of articles B29D 1/14 ; extruding of articles B29D 1/16 ; extruding of articles B29D 1/18 ; extruding of articles B29D 1/20 ; extruding of articles B29D 1/22 ; extruding of articles B29D 1/24 ; extruding of articles B29D 1/26 ; extruding of articles B29D 1/28 ; extruding of articles B29D 1/30 ; extruding of articles B29D 1/32 ; extruding of articles B29D 1/34 ; extruding of articles B29D 1/36 ; extruding of articles B29D 1/38 ; extruding of articles B29D 1/40 ; extruding of articles B29D 1/42 ; extruding of articles B29D 1/44 ; extruding of articles B29D 1/46 ; extruding of articles B29D 1/48 ; extruding of articles B29D 1/50 ; extruding of articles B29D 1/52 ; extruding of articles B29D 1/54 ; extruding of articles B29D 1/56 ; extruding of articles B29D 1/58 ; extruding of articles B29D 1/60 ; extruding of articles B29D 1/62 ; extruding of articles B29D 1/64 ; extruding of articles B29D 1/66 ; extruding of articles B29D 1/68 ; extruding of articles B29D 1/70 ; extruding of articles B29D 1/72 ; extruding of articles B29D 1/74 ; extruding of articles B29D 1/76 ; extruding of articles B29D 1/78 ; extruding of articles B29D 1/80 ; extruding of articles B29D 1/82 ; extruding of articles B29D 1/84 ; extruding of articles B29D 1/86 ; extruding of articles B29D 1/88 ; extruding of articles B29D 1/90 ; extruding of articles B29D 1/92 ; extruding of articles B29D 1/94 ; extruding of articles B29D 1/96 ; extruding of articles B29D 1/98 ; extruding of articles B29D 1/100)
<input checked="" type="checkbox"/> B29C 47/00	Injection moulding, i.e. forcing the required volume of moulding material through a nozzle into a mould cavity; Apparatus therefor (continuous moulding of articles B29C 47/02 ; extruding tube ends using pressure differences B29C 47/04)

By clicking on the title of a given classification symbol, the sub-classes can be opened.

If you ticking the square to the left of a classification symbol, it will automatically appear in the "Selected classifications" box.

You can, then, either search for patents classified in this area of technology or you can choose to copy it to your search form.

So, one can actually pick out the specific groups by selecting out those particular classifications and then identifying the patent lists from the set.

(Refer Slide Time: 09:13)

Practical Demonstration with Espacenet for Chemical Area

Classification search

CPC Classification

The image shows a screenshot of the Espacenet search interface. The title is 'Practical Demonstration with Espacenet for Chemical Area'. Below the title, it says 'Classification search'. On the right side, there is a search form with several fields: 'Title or abstract', 'Publication number', 'Application number', 'Priority number', 'Publication date', and 'Enter name of one or more patenting organizations'. Below these fields, there is a section for 'Enter one or more classification systems'. In this section, the 'CPC' field is highlighted with a red box, and a red arrow points from the text 'CPC Classification' on the left to this box. The 'CPC' field contains the code 'C02F3/32'. Other classification systems like 'IPC' and 'H' are also visible but not highlighted.

So, the area of the PEF can be looked at from the point of view of even inputting the specific classification code for instance, here we are giving this specific classification code and then one can look at the hits in relation to that.

(Refer Slide Time: 09:32)

Combination Search Using Keyword and Classification

In the "Advanced search" interface of Espacenet to search for patents and introduce keywords and CPC symbols in the related fields.

The image shows a screenshot of the Espacenet search interface. The title is 'Combination Search Using Keyword and Classification'. Below the title, it says 'In the "Advanced search" interface of Espacenet to search for patents and introduce keywords and CPC symbols in the related fields.' On the right side, there is a search form with several fields: 'Title', 'Publication number', 'Application number', 'Priority number', 'Publication date', and 'Enter name of one or more patenting organizations'. Below these fields, there is a section for 'Enter one or more classification systems'. In this section, the 'CPC' field is highlighted with a red box, and the 'IPC' field is also highlighted with a red box. The 'CPC' field contains the code 'C02F3/32' and the 'IPC' field contains the code 'C02F3/32'. Other classification systems like 'H' are also visible but not highlighted.

Now what is the information that can be displayed for us in relation to a patent? Today databases also provide us this very enhanced feature of providing information all at one place rather maximize the information to the user for better benefit. For instance this is a screenshot of one of the patents production of polyethylene furanoate in a retrofitted polyester plant. In this particular page you can see a whole lot of information you can find out the bibliographic data, you can understand the different parts of the document links are available.

You can click on the next set of results. So, you can access from this page to the next page keywords are highlighted, bibliographic information is provided in relation to the patents, the entire set of classifications that are relevant for this particular invention are provided in links here. The link to the global dossier is available, translation options that are available and then patent family data is also provided. So, here we have a good illustration of what all information that can be taken out from a link from one invention in relation to its internal data as well as to other related inventions.

(Refer Slide Time: 11:38)

In-Depth Review of Selected Patents

Family list: US2019022837 (A1) — 2019-01-24

Inventor	Applicant	IPC Class	IPC Class	Publication info	Priority date
JANKA WESPIH EBERSSA SUS FORNTRIST KE-IN JOHNSON	ZASTHANI CHEM CO (US) SUS SUS	C02F 1/00 C02F 1/02 C02F 1/04	B01D 11/00 B01D 11/02 B01D 11/04	US2019022837 (A1) 2019-01-24 2019-01-24	2017-07-28 2019-01-24
JANKA WESPIH EBERSSA SUS FORNTRIST KE-IN JOHNSON	ZASTHANI CHEM CO (US) SUS SUS	C02F 1/00 C02F 1/02 C02F 1/04	B01D 11/00 B01D 11/02 B01D 11/04	US2019022837 (A1) 2019-01-24 2019-01-24	2017-07-28 2019-01-24
JANKA WESPIH EBERSSA SUS FORNTRIST KE-IN JOHNSON	ZASTHANI CHEM CO (US) SUS SUS	C02F 1/00 C02F 1/02 C02F 1/04	B01D 11/00 B01D 11/02 B01D 11/04	US2019022837 (A1) 2019-01-24 2019-01-24	2017-07-28 2019-01-24

This is how one can actually go into an in depth review of the selected patent. So, citation information today is also available by what we call the CCD which is nothing, but the Common Citation Document and so, this is how you can see the entire information that can be listed.

(Refer Slide Time: 11:55)

In-Depth Review of Selected Patents

The screenshot shows the Espacenet interface for patent US2019023677 (A1). The main title is "PRODUCTION OF PURIFIED DIALKYL-FURAN-2,5-DICARBOXYLATE (DAFD) IN A RETROFITTED DMT PLANT". The interface includes a search bar, navigation tabs, and a sidebar with various document types. A red box highlights the "In my patents list" link in the top navigation area. Below the main title, there are sections for "Page bookmark", "Inventors", "Applicants", "Classification", "Application number", "Priority number(s)", and "Also published as". The abstract section is partially visible at the bottom.

• If the patent is relevant, click In my patent list

swayam
INDIA WISE, LEARN WISER

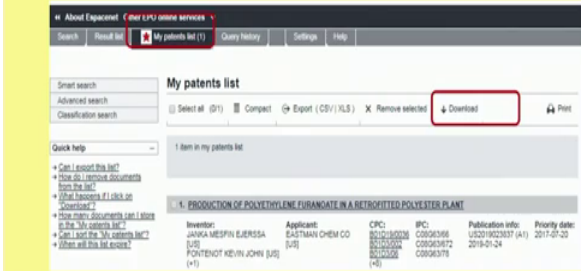
Public databases today are also providing an option of storing information at the user end. So, for instance in the Espacenet you can store your own patent list in what you call in my patents list. So, today you have provided the option of creating different folders in your search list. So, you may undertake this search over a given period of time at the same database, you can review the results by actually accessing these stored data in relation to each of the patent searches that you have actually carried out.

So, this is one thing which is going to be very useful in relation to. Not only that the option of patent translate is available where you can actually select the language and you can ask for a search to be done to for translation into that particular language. So, this is something which is again a user and feature available.

(Refer Slide Time: 12:56)

In-Depth Review of Selected Patents

My patents list is maintained one year unless updated.



25 Patent documents can be downloaded at a time.

Inventor	Applicant	CPC	IPC	Publication info	Priority date
JANAKA MEEPHI SURESHA [US] FOHTEHOT KEVIN JOHN [US] [US]	BAITMAN CHEM CO	8612/2019	C09G0366	US2019022037 (A1)	2017-07-20

1 item in my patents list

PRODUCTION OF POLYETHYLENE FURANATE IN A RETROFITTED POLYESTER PLANT

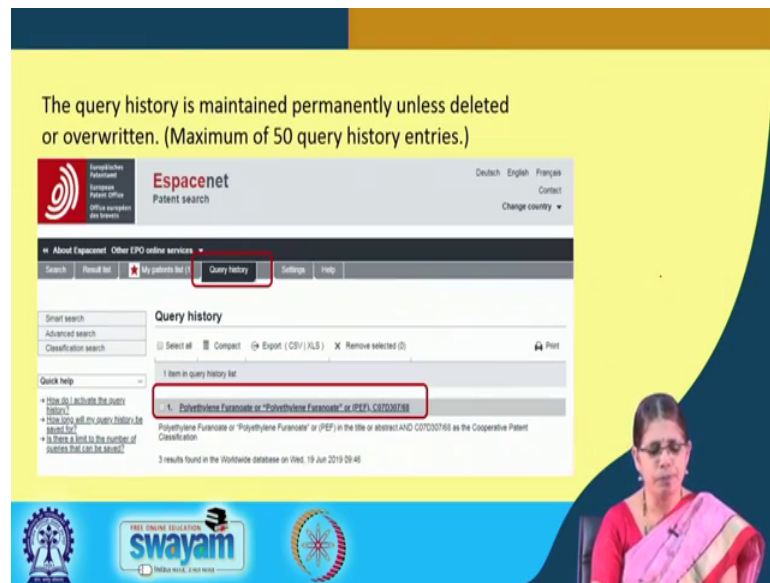
Quick help: Can I export this list? How do I remove documents from the list? What happens if I click on 'Download'? How many documents can I store in the 'My patents list'? Can I sort the 'My patents list'? What are all the list options?

Free Online Education swayam

So, when you store the different search data in relation to particular patents, one can always go back and access that and also continue on that search because what happens is let us say you would conducting a patent landscape search, in which case you are looking at a set of patents for a given period of time. Given that patent landscape search often takes at least up to 15 to it can be even 15 days to even longer. So, when you store the data in my patents list one can actually either enrich that particular folder or you can create several folders so, for ease of use of retrieving the data from the particular list.

This is what is the advantageous feature, generally it is stored up to 1 year the my patent list information. And at a time you can download 25 documents from this link.

(Refer Slide Time: 14:06)

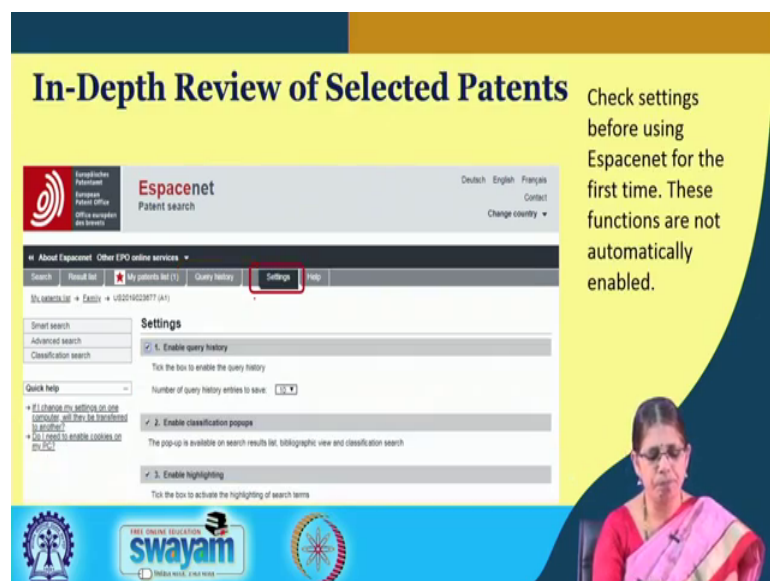


The query history is maintained permanently unless deleted or overwritten. (Maximum of 50 query history entries.)

The screenshot shows the Espacenet Patent search interface. The 'Query history' tab is selected, displaying a list of search queries. The first entry is highlighted: 'Polyethylene Furanoate or "Polyethylen Furanoate" or (PEF) C02C00768'. Below the query, it shows the classification 'Polyethylene Furanoate or "Polyethylen Furanoate" or (PEF) in the title or abstract AND C02C00768 as the Cooperative Patent Classification' and '3 results found in the Worldwide database on Wed, 19 Jun 2019 09:46'. A woman in a pink and white sari is visible in the bottom right corner of the slide.

So, one can also today at the Espacenet access the history information in relation to this search, what does that mean? Now you can access the query that you have put into the database. So, the query history is another important category which is available for you to. So, you can actually understand how you have carried out this search by going back into the query history and looking at the different search you know lists that you have created.

(Refer Slide Time: 14:41)



In-Depth Review of Selected Patents

Check settings before using Espacenet for the first time. These functions are not automatically enabled.

The screenshot shows the Espacenet 'Settings' page. The 'Settings' tab is selected, and the 'Enable query history' option is checked. The 'Number of query history entries to save' is set to 50. Other settings include 'Enable classification popups' and 'Enable highlighting'. A woman in a pink and white sari is visible in the bottom right corner of the slide.

One important consideration when you are looking at an in depth review of selected patents is to keep in mind the need for checking the settings in a particular database. For instance this can make a big change to the search that you do, because today many of the options are not automatically provided, they need to be changed. So, how is it that you can change the settings? For instance if I want to know in my search what were all the different queries that I have actually posted to the database earlier, I would need to enable what we call the query history. So, the number of query histories can actually be also monitored and can be saved.

Do you want to enable any pop ups in terms of classification search bibliographic view, in which case you can also enable that option. If you want a highlighting of particular search terms if you then again, you can actually enable that by enabling the highlighting option. So, selecting the user settings is also very important and today databases also provide you that option. Now one of the important aspect of the chemical area is what we call structure search. Structure search is important because in the area of compositions particularly when you want to assess the novelty of an invention it is important to look at its structure.

Not only that today in the area of claims one another important type of claims are the Markov's claims. Now in a Markov's claim they would be a representative class of compounds which would be elaborated in the claim to indicate the different versions of the molecule. So, if one wants to understand whether your particular molecule is already represented as a patent in a database then one can actually conduct the structure search. So, WIPO provides today the ability to conduct structure search using the patent scope.

(Refer Slide Time: 17:08)

Structure Search with WIPO PATENTSCOPE

The chemical structure search allows users to search for chemical information in PATENTSCOPE.

- Go to <https://patentscope.wipo.int/search/en/search.jsf>
- Click Account Sign Up

The slide displays a screenshot of the WIPO PATENTSCOPE website. The page features a search bar, navigation links, and a 'Simple Search' section. A red box highlights the 'Account Sign Up' link in the top right corner. Below the website screenshot, there are logos for 'swayam' and 'MHRD'.

And how do you do the chemical structure search? This is the link that is available for you to undertake the structure search at the patent scope database of the WIPO. One needs to take a user registration before you embark on the search in the particular database and so, this is how you have account sign up in the database.

(Refer Slide Time: 17:36)

Structure Search with WIPO PATENTSCOPE

Create a new WIPO Account

The slide displays two screenshots from the WIPO PATENTSCOPE website. The left screenshot shows the 'Create WIPO Account' registration form with fields for name, email, and password. The right screenshot shows the 'WELCOME TO WIPO' login page with fields for 'Username' and 'Password'. Below the screenshots, there is a text box that reads 'Log in WIPO Account with user id & password created'. The slide also features the 'swayam' and 'MHRD' logos at the bottom.

Now once you create a new account at this particular database you can conduct the structure search.

(Refer Slide Time: 17:44)

Structure Search with WIPO PATENTSCOPE

WIPO PATENTSCOPE
Search International and National Patent Collections

Click on Search button

Click on Chemical compound

swamy

So, how do you go about with that? You click on the search button and then you find here an additional category called chemical compounds. So, this is the place where you should look for a structure search.

(Refer Slide Time: 18:01)

Structure Search with WIPO PATENTSCOPE

WIPO PATENTSCOPE
Search International and National Patent Collections

There are four types of search

Submit your query directly or check the structure using the show in editor.

Convert structure tab allows the user to search by different types of names of the chemical compound such as trivial name, commercial name, IUPAC name or CAS name, the International NonProprietary Name INN Inchi, Inchikeys or SMILES.

swamy

What is the dimension of the entire structure search this can be researched here? So, one is converting structure, structure editor sub structure and upload structure.

So, there are various ways of looking at structure search often in the area of chemistry you have the different drawing search tools like ChemDraw and others, which are

available for you to draw structures in which case you can draw the structures and upload the structure information. You can also modify the search by modification of the structure. One can also type the IUPAC name of that particular compound, CAS name that is available or even the commercial name of that particular compound.

So, these are the different options available for doing this search. You can actually submit this structure and then look for the compounds that are coming up in the different patents. The editor option is a important option because one can actually modify this structure using the editor option.

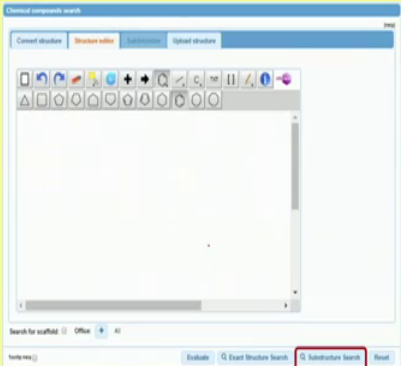
(Refer Slide Time: 19:15)

The image shows a screenshot of the WIPO PATENTSCOPE website. The main heading is "Structure Search with WIPO PATENTSCOPE". Below this, there is a navigation bar with "WIPO PATENTSCOPE" and "Search International and National Patent Collections". The main content area is titled "Chemical compounds search" and features four tabs: "Convert structure", "Structure editor", "Substructure", and "Upload structure". The "Upload structure" tab is highlighted with a red box. Below the tabs, there is a text box that says "Select a structure file (MOL) or image file (PNG, GIF, TIFF, JPEG) and upload it." with a "Browse" button. To the right of this text box, there is a note: "The upload structure tab enables the user to upload a file". At the bottom of the page, there are logos for "swayam" and "Maha Vidya" along with a woman in a pink sari.



So, these are the different ways in which one can actually select the structure file either in a PNG GIF TIFF format or JPEG. So, one need to actually look at it from this format so, the user can upload the file and then conduct the search.

(Refer Slide Time: 19:37)

Structure Search with WIPO PATENTSCOPE



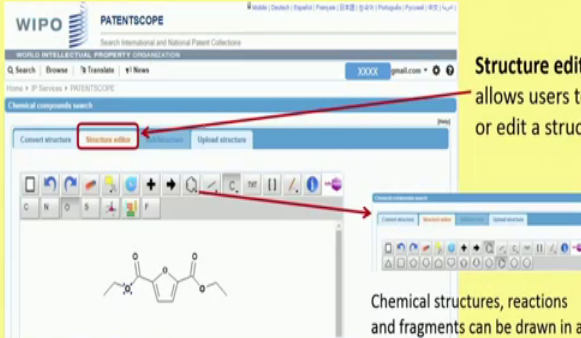
The "Substructure Search" can be submitted from the "Structure"



Now, the structure editor is an important option that is available and this can be used to create a sub structure out of the main structure. As you can see the drawing panel is opened up and one can actually look at the changes that can be done.

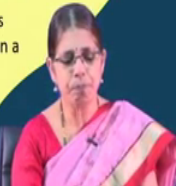

(Refer Slide Time: 19:59)

Structure Search with WIPO PATENTSCOPE



Structure editor tab allows users to draw or edit a structure

Chemical structures, reactions and fragments can be drawn in a very intuitive way using the symbols



For instance this is the structure that we have put in, the different options that are available one can actually take out those structures out of this main structure by the structure editor tab, and that is how one can actually go in for different structures that can come up in relation to the particular molecule.

(Refer Slide Time: 20:19)

The screenshot displays the WIPO PATENTSCOPE search interface. At the top, the title 'Structure Search with WIPO PATENTSCOPE' is shown. Below it, a chemical structure is displayed in a window. The search criteria are set to 'Exact structure search'. A red box highlights the 'Exact structure search' button. The interface includes various filters and options for refining the search. A woman in a pink and white sari is visible in the bottom right corner of the slide.

There is also this option of the exact structure search which is there is no deviation from this main molecule we are looking for patents which exactly represented this particular structure. In which case you click on the button, they exact structure search which gives you the details in relation to the patents.

(Refer Slide Time: 20:44)

The screenshot shows the search results for the chemical structure. The title 'Structure Search with WIPO PATENTSCOPE' is at the top. The search criteria are 'Exact structure search'. The results are displayed in a table with columns for 'Int. Class.', 'Appl. No.', 'Applicant', 'Pub. No.', and 'Pub. Date'. The first result is '1. 108744886 含咪唑的共轭胺及其制备方法' (Imidazole-containing conjugated amine and its preparation method) with a publication date of 10.09.2019. The second result is '2. 108900339 一种吡啶吡咯二杂环二硫醇二硫醇的方法' (A method for a pyridine-pyrrole heterocyclic dithiolane dithiolane) with a publication date of 22.03.2019. A woman in a pink and white sari is visible in the bottom right corner of the slide.

Now there are 65 results which have come out for this particular structure and you can see some patents are in different country languages, you can use the translate option to get the details in relation to the patent.

So, the importance of this is to look at all the patents with the different interventions of this particular structure.

(Refer Slide Time: 21:41)

Structure Search with WIPO PATENTSCOPE

Chemical components search

Convert structure Structure editor **SubStructure** Upload structure

Substructure search results (25+ 81%)

0 of 2 1 2 24

INULFORBAGYOB-UBETTAOYSA.N LGCKXWYTELWON-UBETTAOYSA.N Show more...

Show more action

0 of 2 1 2 24

Search for scaffold: Office: All

swamyam

Moving on; so, you can have n number of structures like this drawn using the sub structure option and this is something which is a very enhanced tool that is available for us to today can do this search.

(Refer Slide Time: 21:57)

Substructure search results (25+ 81%)

0 of 2 1 2 24

After a substructure search has been launched, a list of structures containing the query molecule will be returned (ordered as a grid). The matching substructure is shown highlighted (blue color) by each molecule hit.

You can select one or several structures before submitting the search of the patents clicking on the checkboxes or you can select (or deselect) all the chemical compounds on the page clicking the buttons "Select all" (or "Clear all").

Select all Clear all

swamyam

Look at the different options that are available on this particular sub structure search. So, what happens is you get a list of all the buttons all the buttons available, now you can

eliminate certain of these structures by selecting out and clearing them, else you can actually go for patents where all these different structures could exist.

So, one can actually make a smaller list of molecules that you can actually search for, but it provides you the nice thing about the substructure search is that it provides you a range of the different forms of the same molecule.

(Refer Slide Time: 22:41)

Structure Search with WIPO PATENTSCOPE

“Select all” : All are selected
Click search button. A maximum of 1024 chemical compounds can be selected for the search of the patents

Click search

So, one can look for a select all option in which case you have a maximum of 1024 chemical compounds that can be actually searched for. So, what do you do? You click on the search button to generate the patents that are available with respect to any of these.

(Refer Slide Time: 23:01)

The screenshot shows the WIPO PATENTSCOPE search results page. The search criteria are: Capsule containing furan ring and preparation method thereof. The results list includes:

- 1. 100000000 Capsule containing furan ring and preparation method thereof. Application No: 201010291207, Publication No: 100744000, IPC: C10D 51/00, C10D 51/70. Inventors: 王利军, 王利军. Agents: 北京中咨知识产权代理有限公司. Priority Date: 20101221. Abstract: [C10D] Capsule containing furan ring and preparation method thereof. The invention relates to a furan di-substituted acid copolymer and a preparation method thereof, wherein the furan ring-containing copolymer has a network structure with a molar ratio of 1:1 to 2:0, 0:200 to 1:0, 0:200 to 1:0 of the furan component, the second component is the furan component and the third component is the furan component, the first component and the fourth component are polyimides, wherein the first component contains furan di-substituted acid, furan di-ether. At least one of the second component comprises at least one of an aromatic di-ether and an aliphatic di-ether, the third component comprises a polyimide having a hydroxy group of 1 or more, and the fourth component comprises a polyimide having a hydroxy group of 1 or more and an end amine having a hydroxy group of 1 or more and used as a segment connector, and the segment structure of the furan ring-containing copolymer is expanded to a network structure thereby obtaining a capsule in situ. A high-molecular-weight furan ring-containing copolymer having excellent mechanical properties and gas barrier properties.

Annotations on the slide include: "Review Results" at the top left, "Results" with an arrow pointing to the search criteria, and "Click patent number" with an arrow pointing to the patent number "100744000".

Now these are the results presented to you. So, we have about 145 different patents that are relevant for this particular search. Now the different hits that you have got you can analyze them for instance if you click on the patent number you will get the details again of the patent information and the specific invention in relation to that particular area.

(Refer Slide Time: 23:28)

The screenshot shows the patent document details for the patent with number 100744000. The title is "Capsule containing furan ring and preparation method thereof". The document includes bibliographic data, claims, drawings, compounds, and documents. The abstract is visible, describing the invention as a furan di-substituted acid copolymer and a preparation method thereof, forming a network structure with a molar ratio of 1:1 to 2:0, 0:200 to 1:0, 0:200 to 1:0 of the furan component.

So, here you can find the data the entire bibliographic data, the claims drawings all that information in that particular window. One of the important things in relation to building a good search is the use of nested strings operators and truncation. Let us understand

further in this practical aspect of search how to use these to really good to really get a good set of hits.

(Refer Slide Time: 23:59)

Building a nested string, using operators, using truncation

Inventions related to **radio frequency identification (RFID) tags used to track the movement of containers.**

Keyword Search

- Key concepts**
 - Radio frequency identification
 - RFID
 - Container
- Phrases (Identify compound words)**
 - Radio frequency identification
 - RFID
 - Container
- Boolean operators** (indicate relationships between concepts (synonyms and additional concepts))
 - "Radio frequency identification" OR RFID AND Containers
- Nesting** (resolve ambiguous logic)
 - ("Radio frequency identification" OR RFID) AND Containers
- Wildcard operators** (include variants their plural forms)
 - ("Radio frequency identification" OR RFID) AND Container*

swayam

This is one example to indicate how one can efficiently use the different strings and operators. For instance if you are looking at inventions related to radio frequency identification tax, which are used for tracking movement of containers.

If one way to use a keyword search what are the key concepts one would consider? Radio Frequency Identification it is a abbreviation RFID because we are looking at tracking containers we have combining container along with the keyword, the phrases could be exactly similar in terms of the area. What are the operators one can use? The operators one can use the full form or the abbreviated form and containers, how does nesting help? Nesting helps him to look at the grouping of certain words.

So, here in this case what is the best way to nest the word, RFID and the full form of it is; obviously, one group. So, you are putting them together into one group. So, that is one nest and then you are treating this nest with containers. So, that is how nesting is done. Now, one can do this kind of a nesting with containers also you can say receptacle, you can use other options. So, you can say AND then there could be another nest. So, you can actually create a whole lot of nested options in relation to different set of keywords. So, that is the advantage of using nesting as an option.

Many a time, we use also what we call the wild card operators and why is that important? That is important because in patents the way it is represented its sometimes different; container could be there as containers there could be different ways in which it is represented. So, therefore, using wildcard operators is also very important. Sometimes the keywords are present in the form of nearby queries. So, the near option is usually also used.

For instance one in important thing which patent researchers to need to keep in mind is how is the area represented in relation to an invention. For instance if you are looking at inventions in relation to let us say a molecule which is erythropoietin. So; obviously, the core aspect of the inventions that you would search for would be erythropoietin as a molecule and its patents. Now if you look at a whole lot of patents in relation to insulin also you would get EPO anthropoid in what does it mean? That means, there is a link between the erythropoietin pathway and insulin pathway.

You would get receptors in relation to erythropoietin. So, the question is if you looking at EPO and insulin you will have to bring them together that how far is it relevant to look for EPO and insulin. In many patents you would also find the word either adjacent by two words or adjacent by four words. So, it is a; it actually represents how the patents are in that particular area. So, the keywords that you choose in an area, you would also need to sometimes look at what you call the adjacent or the near operators in order to build this search very well. Normally as a searcher when you are a beginner the first thing that one would look at is doing a pilot set of study.

In the pilot study you would pick up let us say 10 to 20 patents and look at the abstract, because abstract is typically a searchable category, it also provides you a concise information of the invention. And look at it is at that stage you will identify how the area is represented in terms of these keywords, would there be a need to use a near operator, would there be a need to use an adjacent operator can then be decided accordingly. And so, when you are looking at the implementation of invention in a given setup, you will also be interested in looking at those near operators or the adjacent operators. And so, therefore, understanding the relevance of operators is very important for keyword search.

(Refer Slide Time: 29:02)

c. Practical demonstration with PATENTSCOPE

WIPO PATENTSCOPE
Search International and National Patent Collections

WORLD INTELLECTUAL PROPERTY ORGANIZATION

Search | Browse | Translate | News

Home | IP Services | PATENTSCOPE

Simple Search

Using PATENTSCOPE you can search 75 million patent documents including 3.6 million published international patent applications (PCT). Detailed coverage information can be found here.

Front Page [] Office:AI [] Search []

PCT Publication 24/2019 (13.06.2019) is now available. The next publication date is scheduled as follows: Gazette number 25/2019 (20.06.2019). More

swayam
INDIA WIDE, 100% FREE

Shall we break it here now for the next lecture?

Student: Yes mam.

[FL] Thank you [FL] and then we will continue once it a practical demonstration is [FL].

Student: Mam stop [FL].

[FL] [FL] Thank you [FL] then I will continue ok.

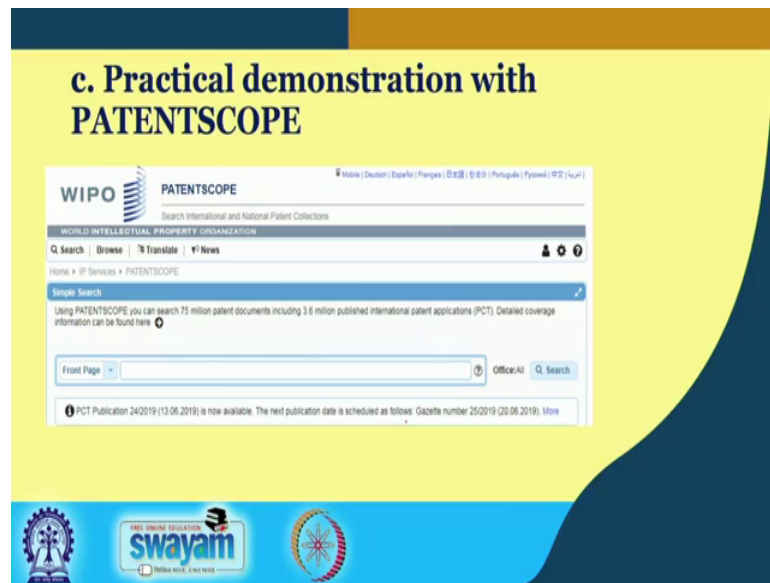
Student: If you remember [FL] wait [FL].

Ok.

Student: Ok continue.

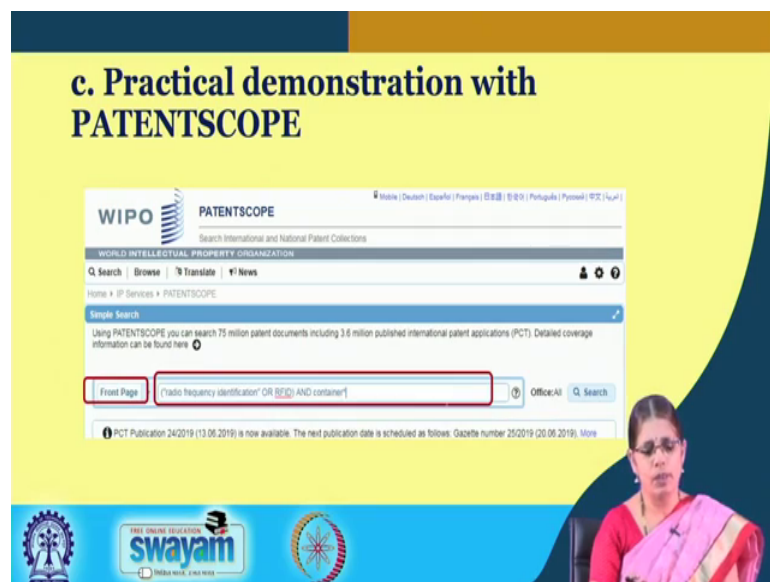
So, with this we have understood the aspects of how the keyword search is done using structure search, and the need of understanding how to build a very efficient search query.

(Refer Slide Time: 30:02)



Let us understand the practical demonstration of these set of keywords using patent scope. If you go to the patent scope website you can go to the front page under the simple search. It is at this stage you can look at the option of the query window.

(Refer Slide Time: 30:25)



You can put the nested keyword set in this particular window and look for it search.

(Refer Slide Time: 30:32)

c. Practical demonstration with PATENTSCOPE

WIPO PATENTSCOPE

Search International and National Patent Collections

Results 1 to 10 of 2,402 for **RFID frequency identifier** OR **RFID AND container**

1. **SYSTEM AND APPARATUS FOR AUDITING BIOLOGICAL SAMPLES IN COLD STORAGE** (EP 1238 2019)
BIO1 300 KUSTODIA LTD FIONCELLA ENZ

2. **MOBILE STORAGE, TRACKING AND SECURITY SYSTEM AND METHOD THEREOF** (US 0838 2019)
0008 1324 1064202 JSD System Solutions LLC Kevin Vain Hall

Result set

What comes out is the list of patents that are actually around 2400 and 12 patents listed for Radio Frequency Identification or RFID and container this is a large set of hits. So, the result set provided to you in a set of continuing pages under the search hit list.

(Refer Slide Time: 31:01)

c. Practical demonstration with PATENTSCOPE

WIPO PATENTSCOPE

Search International and National Patent Collections

Results 1 to 10 of 2,402 for **RFID frequency identifier** OR **RFID AND container**

1. **SYSTEM AND APPARATUS FOR AUDITING BIOLOGICAL SAMPLES IN COLD STORAGE** (EP 1238 2019)
BIO1 300 KUSTODIA LTD FIONCELLA ENZ

2. **MOBILE STORAGE, TRACKING AND SECURITY SYSTEM AND METHOD THEREOF** (US 0838 2019)
0008 1324 1064202 JSD System Solutions LLC Kevin Vain Hall

Review result set

It is important to now review the result set. One is it for the reason that whether it is relevant to the search that has been undertaken. Now one advantage that you get these days is that you have what we call the keyword highlighting in the databases that is provided. So, here you are looking at for instance the first invention which is a system

and apparatus for auditing biological samples in cold storage, and this the subject matter of this invention is a system. Here the biological samples are present in the cold storage vessel and the use of RFID tag is needed for identifying the container.

So, this is a relevant invention. So, there could be many others which one needs to actually look at from the point of view at the relevance of the particular invention. One can actually also do a narrower search by combining in the nested operators in relation to container. That is how you could actually make the search even narrow and assemble the logical set of hits in relation to a particular area. One can also conduct a broad search by leaving it as the container itself. So, it is actually depends on what kind of search you want to perform, do you want all the distal hits or you want the specific hits only.

(Refer Slide Time: 32:42)

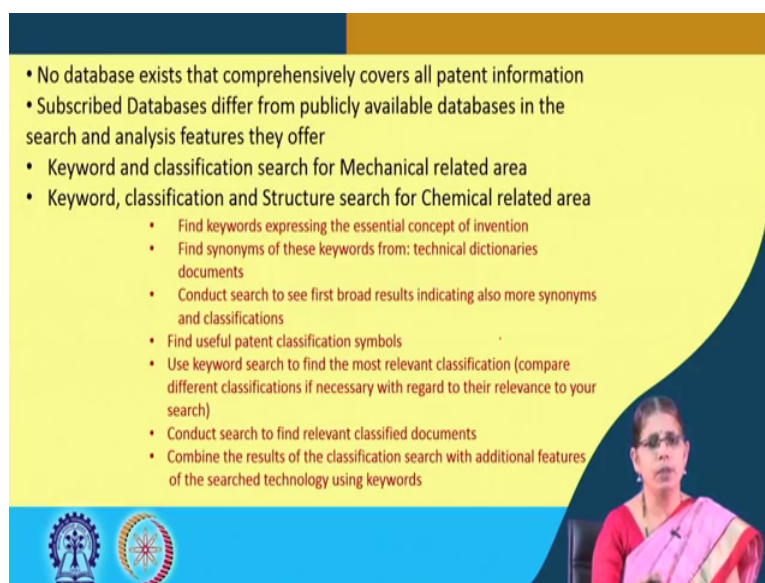
c. Practical demonstration with PATENTSCOPE

Review patent

Application Number	Publication Number	Priority Date	Title
171801	343628	20160404	SYSTEM AND APPARATUS FOR AUDITING BIOLOGICAL SAMPLES IN COLD STORAGE VESSEL USING RFID TAG IDENTIFYING THE CONTAINER

Based on the hits that are actually collected, one can actually look at the review of each of those patents relevant to the particular area.

(Refer Slide Time: 32:55)



- No database exists that comprehensively covers all patent information
- Subscribed Databases differ from publicly available databases in the search and analysis features they offer
- Keyword and classification search for Mechanical related area
- Keyword, classification and Structure search for Chemical related area
 - Find keywords expressing the essential concept of invention
 - Find synonyms of these keywords from: technical dictionaries documents
 - Conduct search to see first broad results indicating also more synonyms and classifications
 - Find useful patent classification symbols
 - Use keyword search to find the most relevant classification (compare different classifications if necessary with regard to their relevance to your search)
 - Conduct search to find relevant classified documents
 - Combine the results of the classification search with additional features of the searched technology using keywords

So, the summary of the lecture is as follows. There are several databases which are provided by the on subscription mode and there are essential differences between subscribed databases and the publicly available databases. No database is comprehensive in to cover all type of patent information, this is important to keep in mind because patent databases are often updated.

The analysis options that are provided by the subscribed databases are very user friendly and help in the making the qualitative and the quantitative information in a very user friendly wave. We have understood the aspects of keyword and classification search in relation to the mechanical area taking the switchgear example. We have also conducted the search in relation to the chemical area by understanding the aspects of keyword classification and the structure search.

So, to summarize it finding the keywords which define the essential concept of the invention is important, identifying the synonyms from various ways of using dictionaries or related data. Conducting the search first to understand the broad results and then narrowing down the search is important. The use of patent classification symbols is necessary to look for inventions in a particular area. There is an efficient way of combining keyword and classification in order to get a very relevant hits in relation to invention. The using the classification search one can actually look at the relevant classifications in the country classification mode as well.

(Refer Slide Time: 35:00)



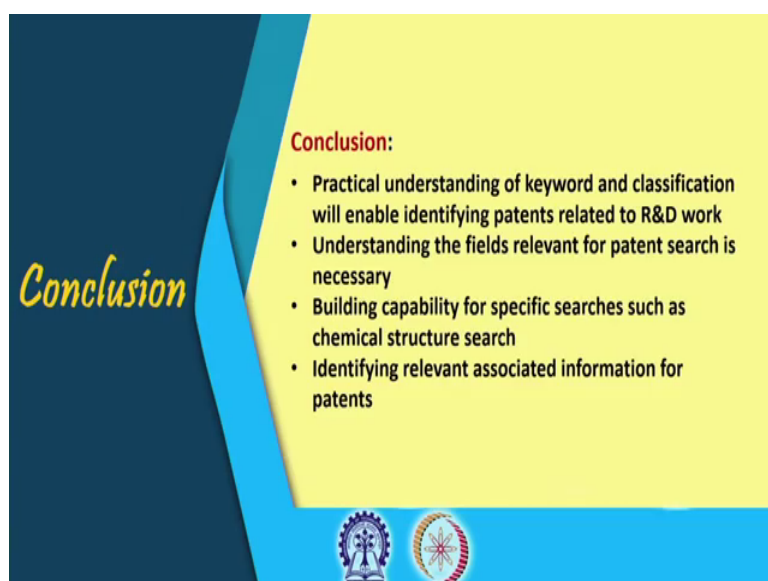
References:

- ❑ Indian Patent Office Website <http://www.ipindia.nic.in/>
- ❑ WIPO Website <https://www.wipo.int/portal/en/index.html>
- ❑ United States Patent Office Website <https://www.uspto.gov/>
- ❑ European Patent Office Website <https://worldwide.espacenet.com/>

The slide features a dark blue background on the left with the word 'References' in a yellow, cursive font. The right side has a yellow background with the 'References:' heading and a list of four patent office websites, each preceded by a small square icon. In the bottom right corner, there is a photograph of a woman wearing a pink and white sari and glasses. At the bottom center, there are two circular logos: one of the Indian Patent Office and another of the Indian Council of Scientific and Industrial Research (CSIR).

The references for this particular lecture can be obtained at the different databases that have been referred to in terms of this search, understanding the practical aspects of search is very important from the point of view of undertaking search. Many a time searchers take a longer time in order to become good in has a patent searcher because it is the question of not only familiarity of a database. It is the question of also understanding building a mindset as a patent searcher.

(Refer Slide Time: 35:39)



Conclusion:

- Practical understanding of keyword and classification will enable identifying patents related to R&D work
- Understanding the fields relevant for patent search is necessary
- Building capability for specific searches such as chemical structure search
- Identifying relevant associated information for patents

The slide features a dark blue background on the left with the word 'Conclusion' in a yellow, cursive font. The right side has a yellow background with the 'Conclusion:' heading and a list of four bullet points. At the bottom center, there are two circular logos: one of the Indian Patent Office and another of the Indian Council of Scientific and Industrial Research (CSIR).

The conclusion of today's presentation is the insight into the practical aspects of keyword and classification search which will enable identifying patents for R and D work. What are the relevant fields for doing patent search that understanding is necessary. Building the capability for conducting specific searches such as chemical structure search is necessary. Understanding associated patent information in relation to patents is another aspect of the study that we have done today.

Thank you.