**Patent Search For Engineers and Lawyers**
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**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.

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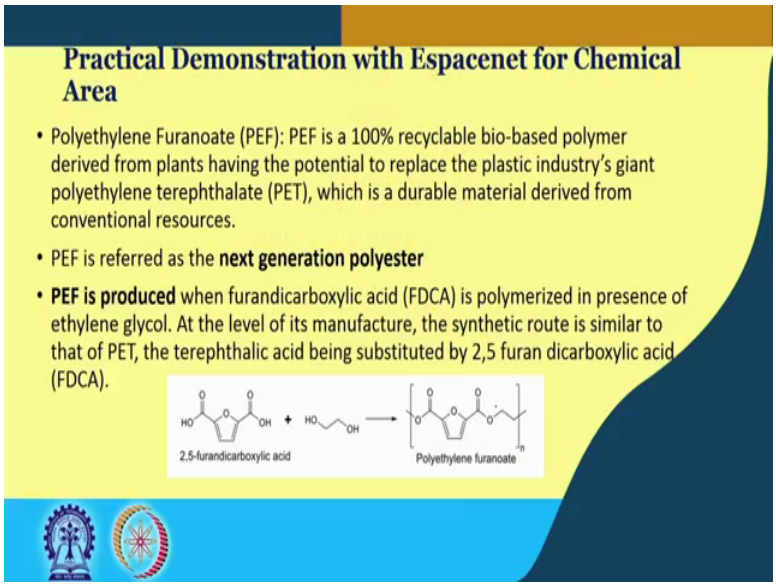


One example that we will be taking up today with respect to the practical demonstration is polyethylene furanoate.

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.

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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.

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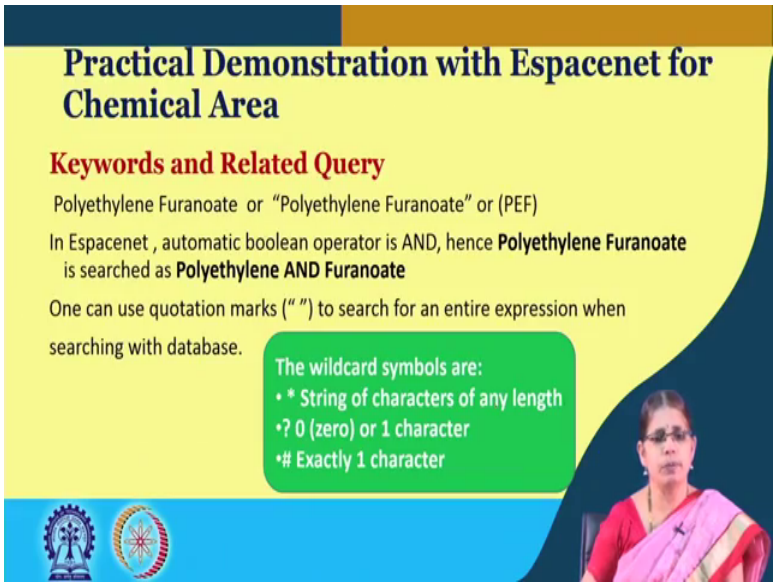


If you one is interested in looking at the different inventions in relation to polyethylene furanoate, one can undertake a keyword search. So, what are the different keywords that we would actually undertake in order to get the inventions in relation to polyethylene furanoate? So, one can use the keyword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

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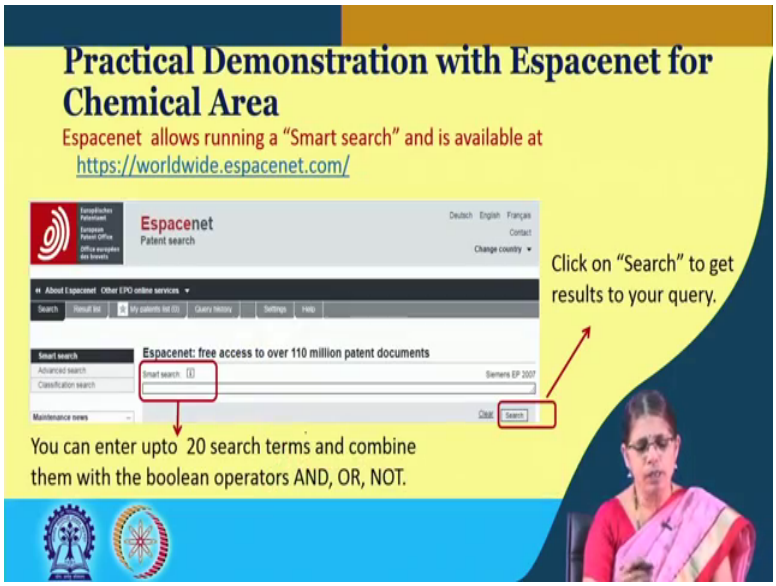


So, this is one instance where we are looking at the search using the smart search option available at the Espacenet. What is the advantage of this smart search option is that, this is very unique because it provides you a concept based search. So, you can actually provide a phrase in this particular 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.

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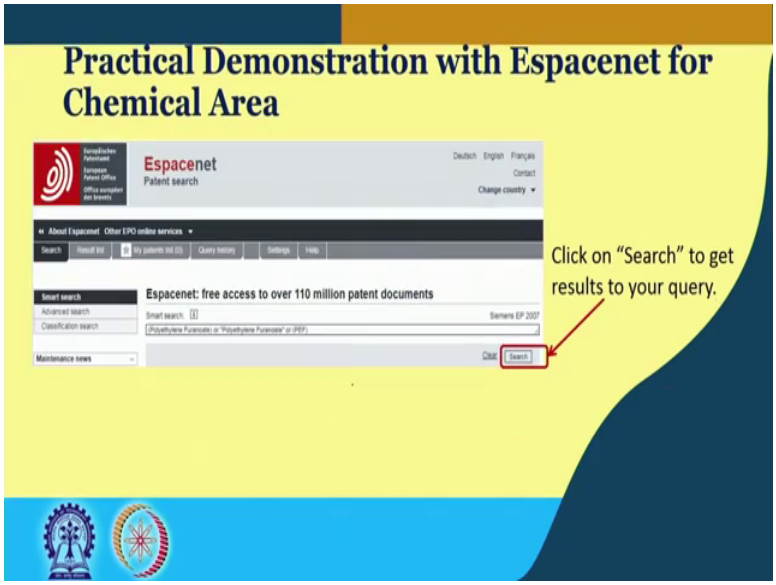

So, when you put in the keyword in relation to polyethylene furanoate and hit on the search button, please see the information that is provided in relation to each of the listed patterns.

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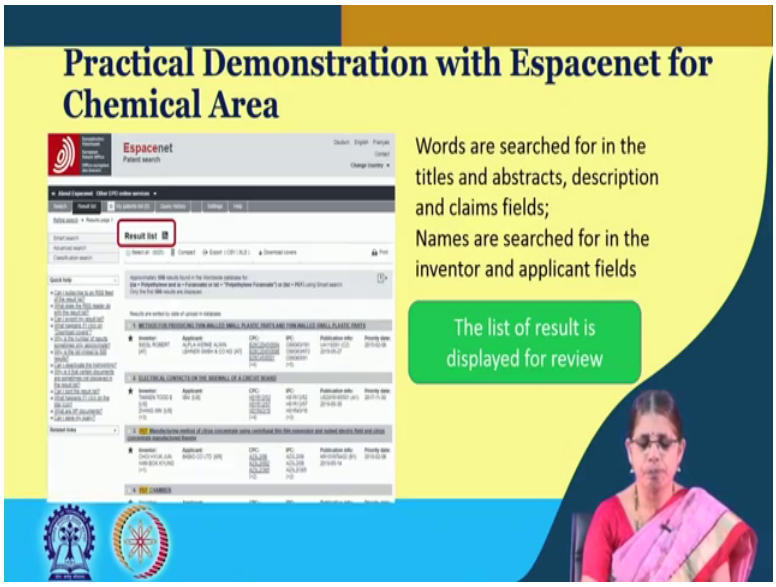


You have the title who is the inventor the applicant the relevant classification system the CPC or IPC, publication information on that particular patent and also priority date of that particular invention similarly you have that listed for all the different inventions. So, one question that comes to our mind is that where are the keywords searched. So, the keywords are essentially searched in the title abstracts descriptional also the claim fields.

So, one can now download this information and look at the results in terms of providing information in relation to mapping of a particular set of data or even actually providing priority information. So, various type of graphs can be drawn beginning with the specific technical information as well as you know the information in relation to either why by way of priority date or publication date any of that information can be actually captured in form of patent mapping.

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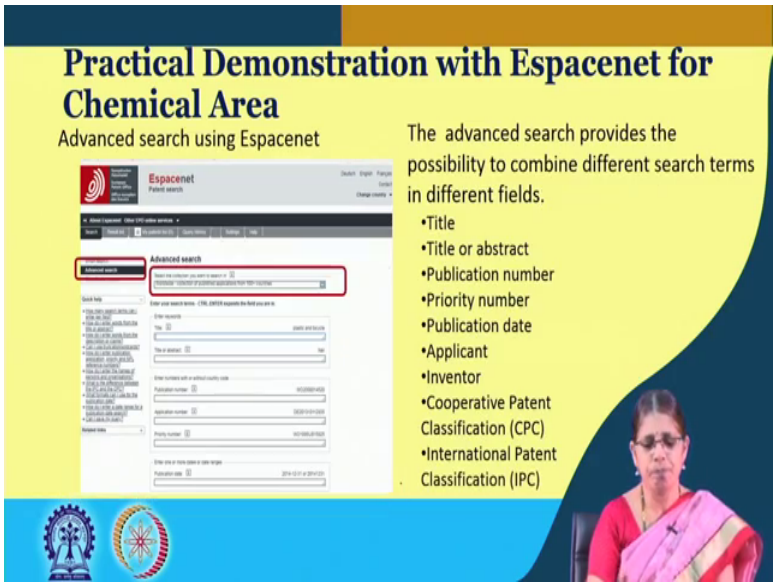


There is also another option that is available at the Espacenet which is the advanced search option. In the advanced search option one can actually put in a whole lot of information where one can search for specific category of fields and combine them in order to get the search. So, therefore, what are 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.

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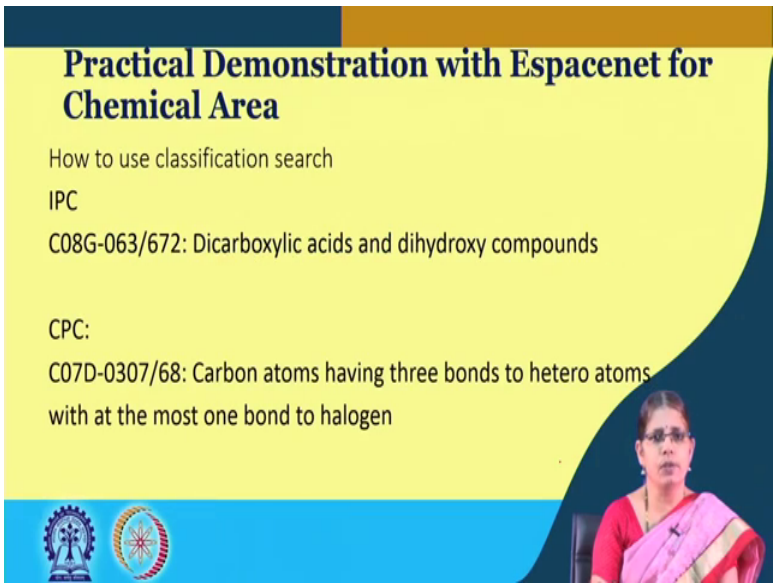

Generally this will belong to the C class and in the IPC this is the particular class which is dicarboxylic acid with dihydroxy compounds. If you look at the CPC, CPC list them under this particular code.

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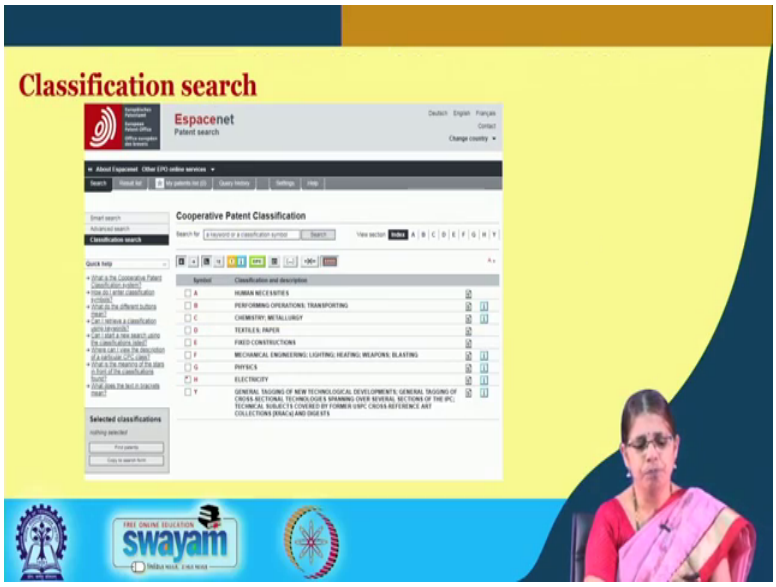


Let us recall back the CPC classification. So, here you have A to H and Y class. So, we are talking about C which is chemistry and metallurgy.

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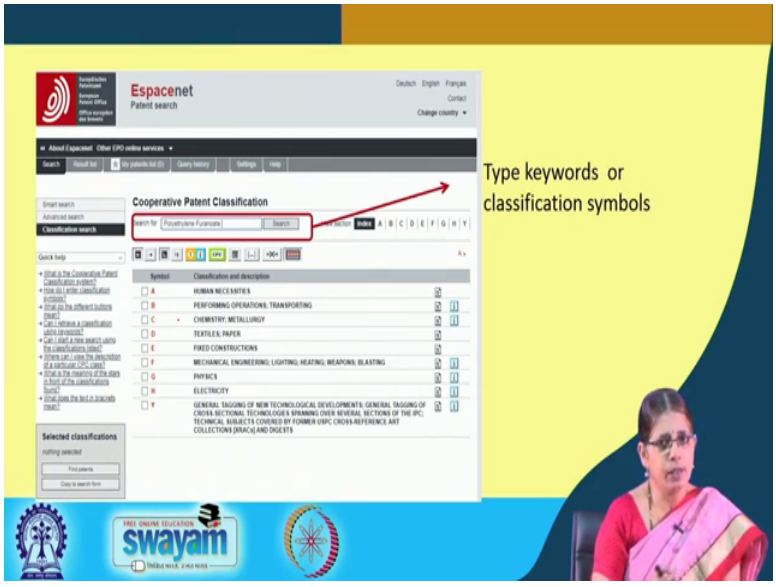


So, one can actually type in the word polyethylene furanoate and simply search in the CPC search list.

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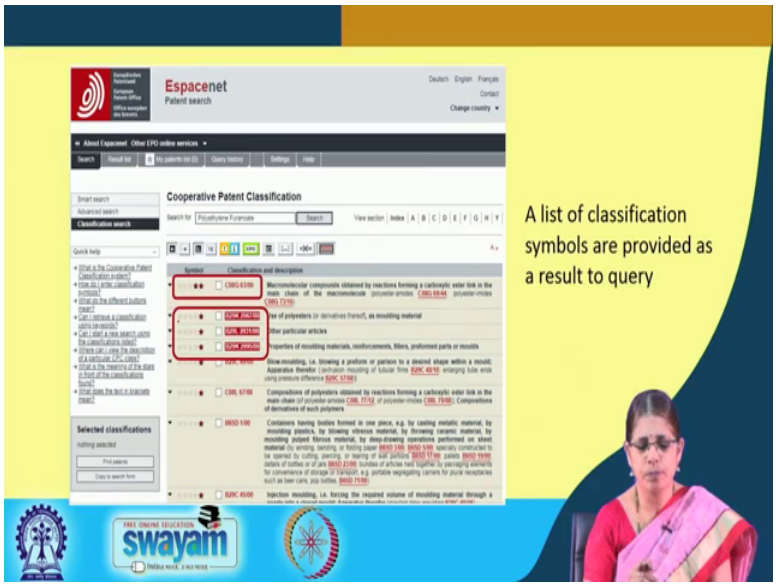


This is the list of hits that you get when you search under the CPC. The classification codes are represented and against that you also get the description of that particular field. So, what does this give you? This gives you actually the entire implementation of the invention in the various ways. And 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.

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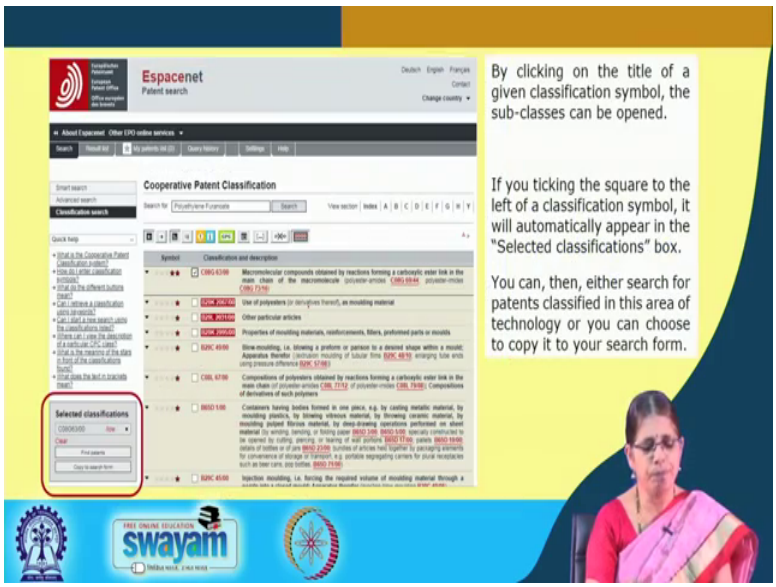

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So, one can actually pick out the specific groups by selecting out those particular classifications and then identifying the patent lists from the set.

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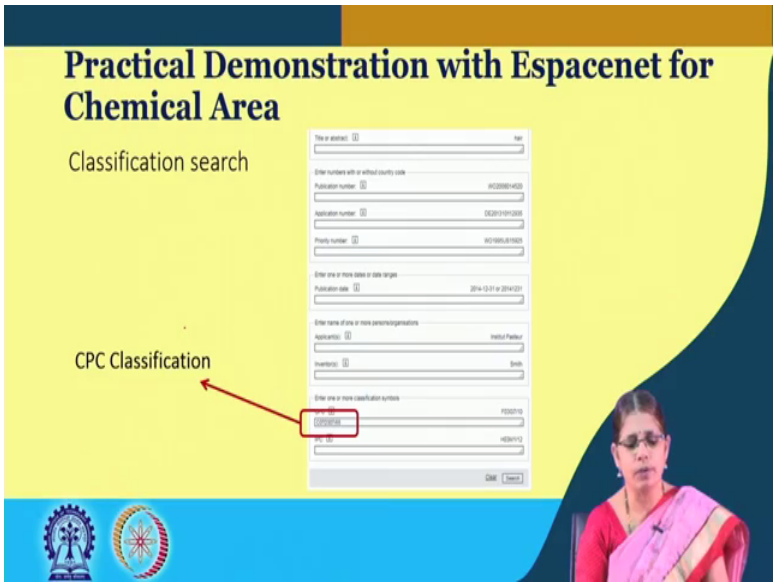


So, the area of the PEF can be looked at from the point of view of even inputting the specific classification code for instance, here we are giving this specific classification code and then one can look at the hits in relation to that.

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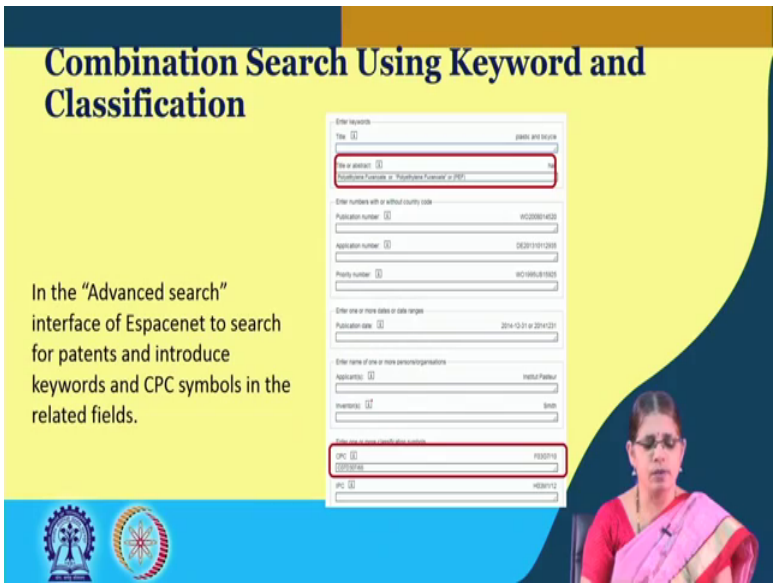

Now advanced search option is one good option in order to look for patents in this particular area.

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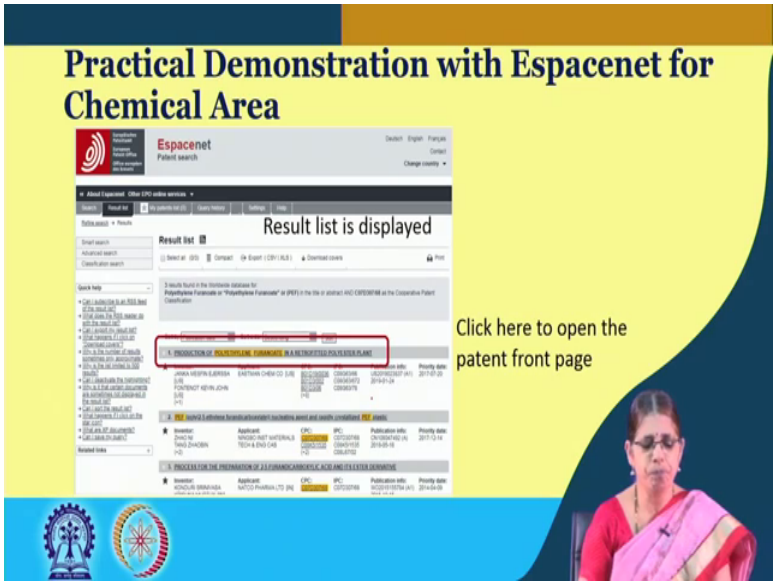


So, here you have the results displayed in relation to using title as well as classification. So, we are looking at what? We are looking at combining the keyword search and we are also looking at the classification search. So, these are the list of hits that are represented in the database. Now, one can look at these individual patents to identify those which are relevant to the invention.

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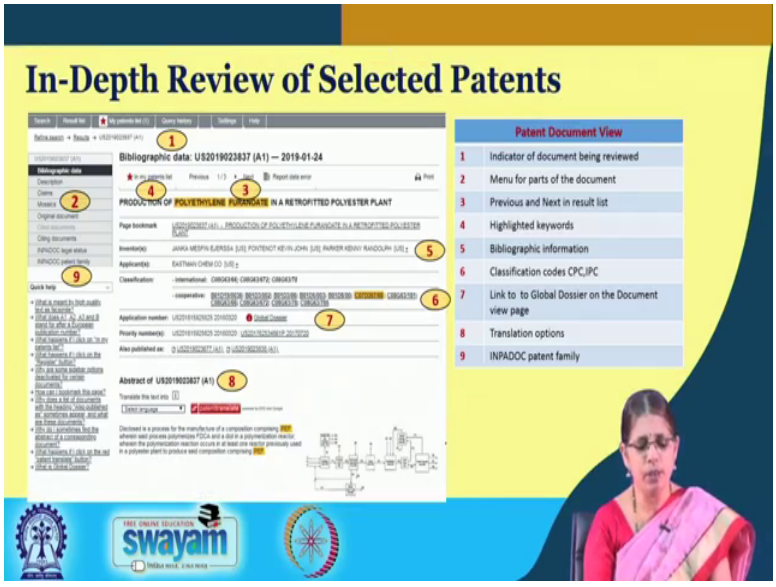

Now what is the information that can be displayed for us in relation to a patent? Today databases also provide us this very enhanced feature of providing information all at one place rather maximize the information to the user for better benefit. For instance this is a screenshot of one of the patents 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.

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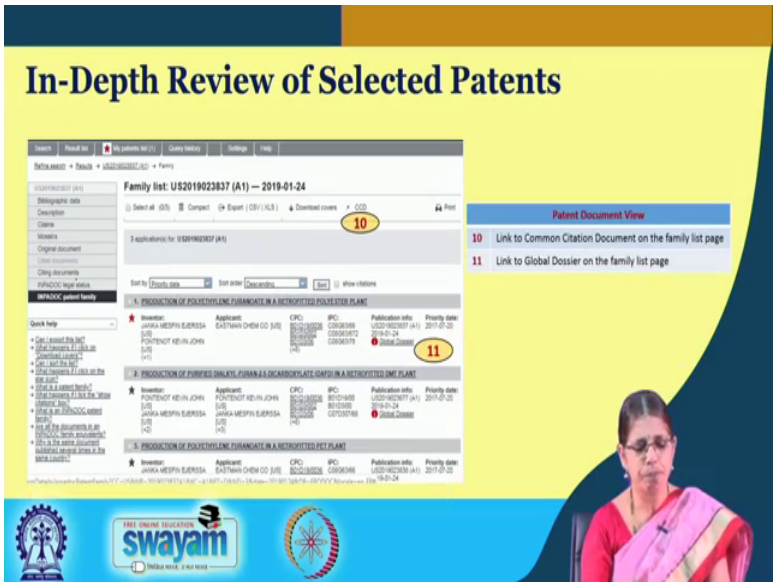


This is how one can actually go into an in depth review of the selected patent. So, citation information today is also available by what we call the CCD which is nothing, but the Common Citation Document and so, this is how you can see the entire information that can be listed.

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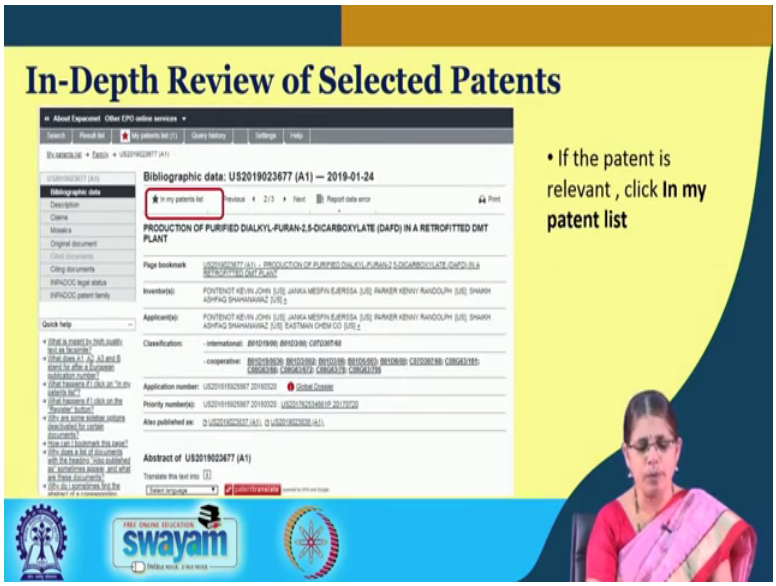


Public databases today are also providing an option of storing information at the user end. So, for instance in the Espacenet you can store your own patent list in what you call in my patents list. So, today you have provided the option of creating different folders in your search list. So, you may undertake 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.

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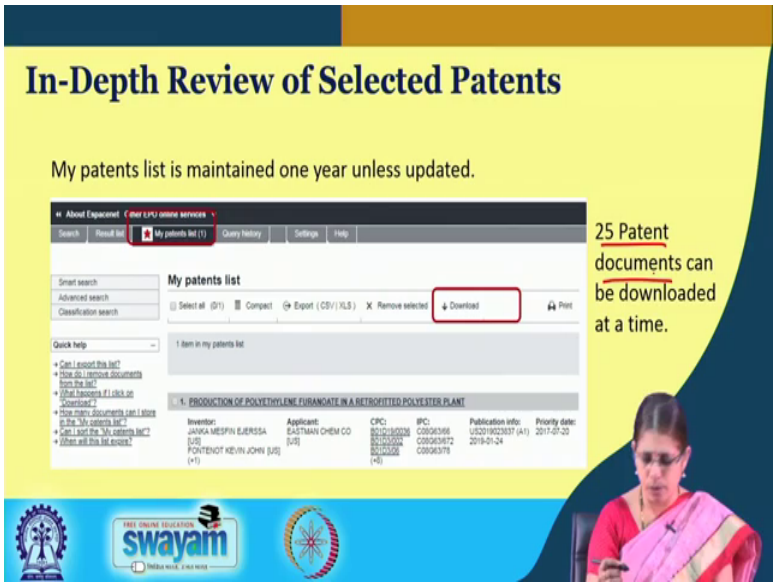


So, when you store the different search data in relation to particular patents, one can always go back and access that and also continue on that search because what happens is let us say you would conducting a patent landscape search, in which case you are looking at a set of patents for a given period 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.

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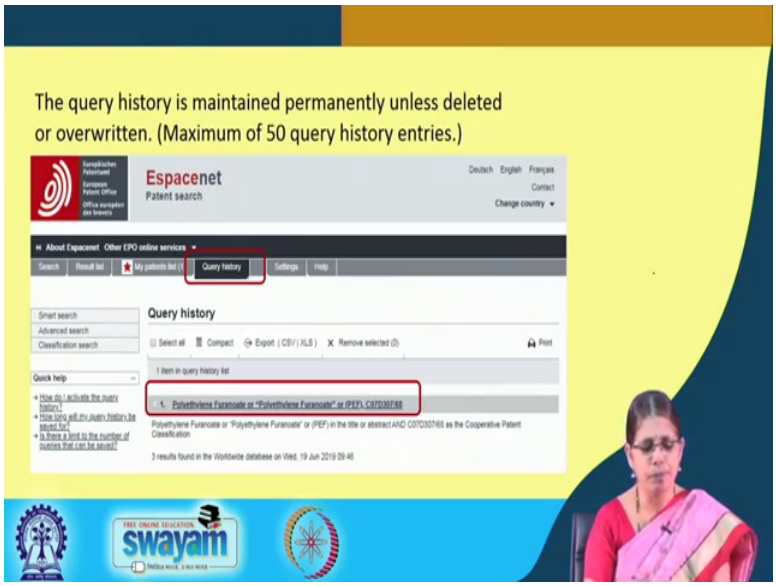


So, one can also today at the Espacenet access the history information in relation to this search, what does that mean? Now you can access the query that you have put into the database. So, the query history is another important category which is available for you to. So, you can actually understand 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.

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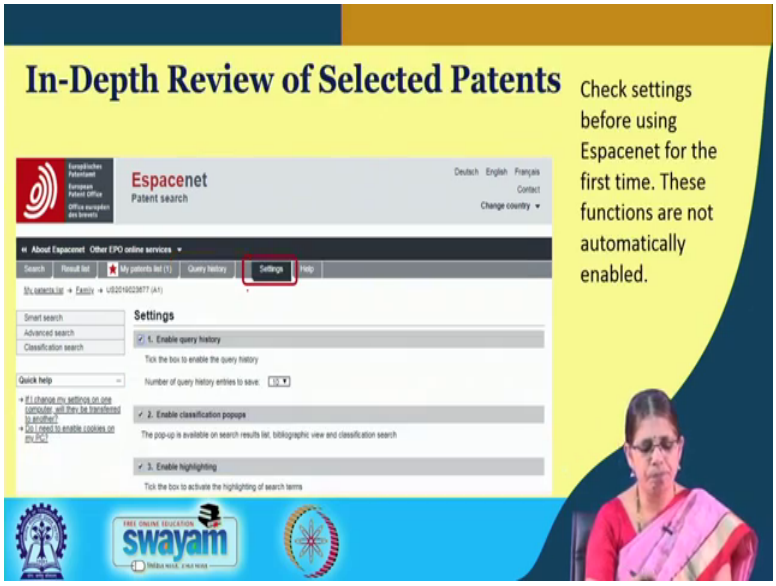

One important consideration when you are looking at an in depth review of selected patents is to keep in mind the need for checking the settings in a particular database. For instance this can make a big change to the search that you do, because today many of the options are not automatically provided, 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.

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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.

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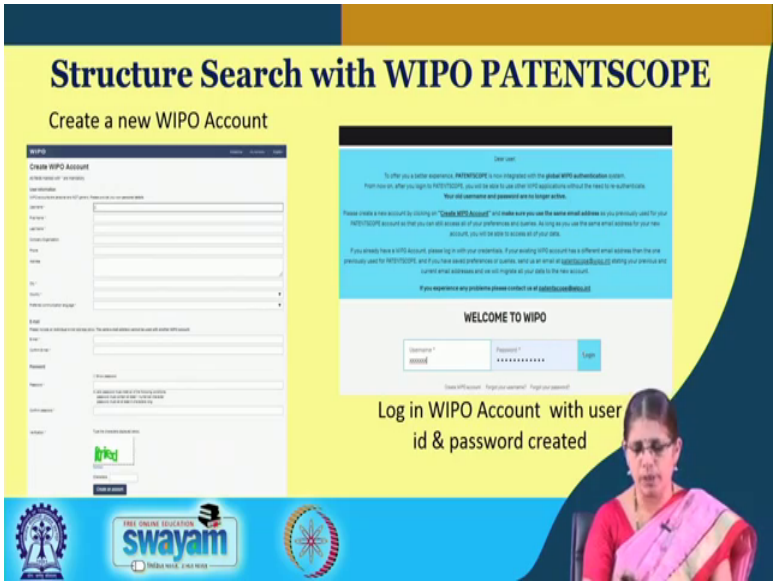


Now once you create a new account at this particular database you can conduct the structure search.

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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.

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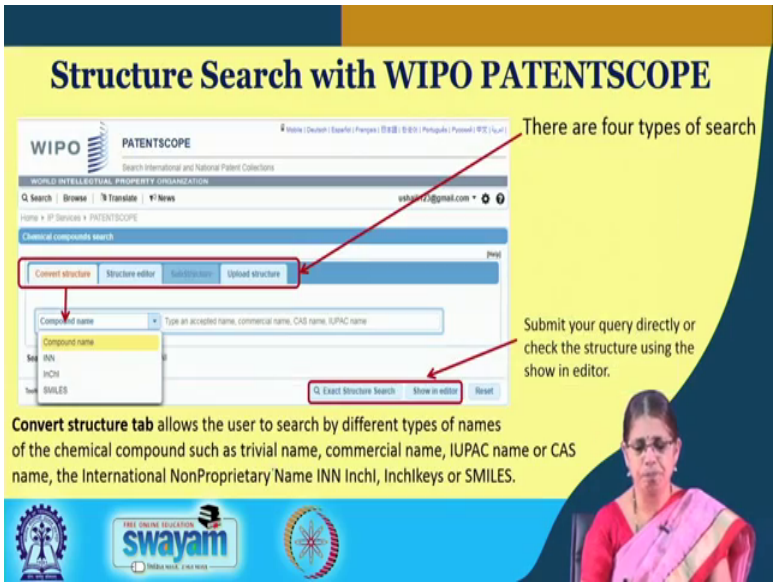


What is the dimension of the entire structure search this can be in researched here? So, one is converting structure, structure editor sub structure and upload structure.

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.

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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.

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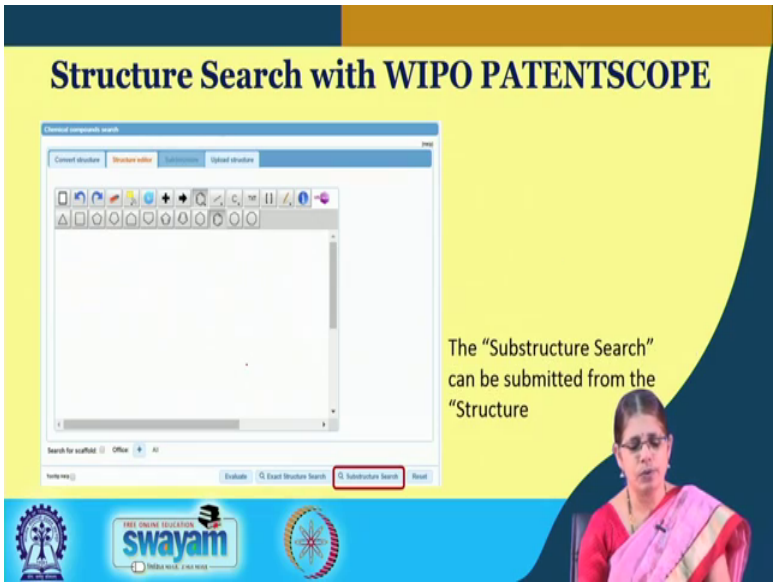


Now, the structure editor is an important option that is available and this can be used to create a sub structure out of the main structure. As you can see the drawing panel is opened up and one can actually look at the changes that can be done.

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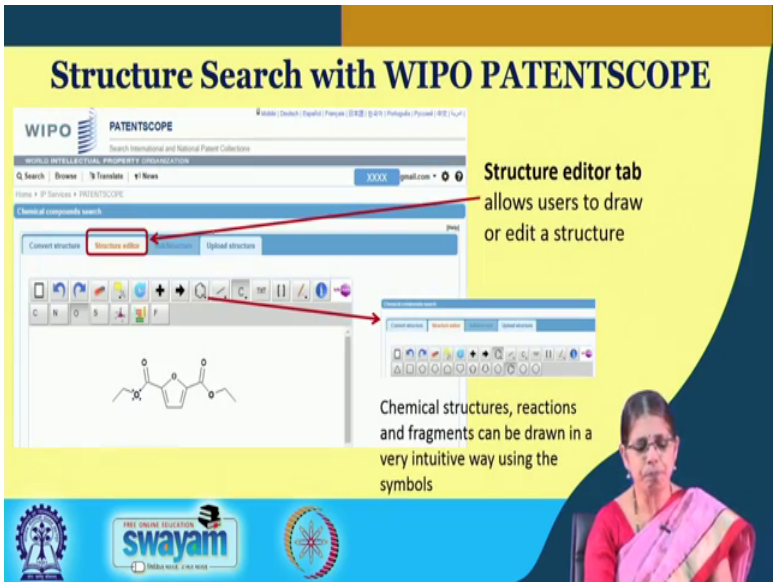


For instance this is the structure that we have put in, the different options that are available one can actually take out those structures out of this main structure by the structure editor tab, and that is how one can actually go in for different structures that can come up in relation to the particular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

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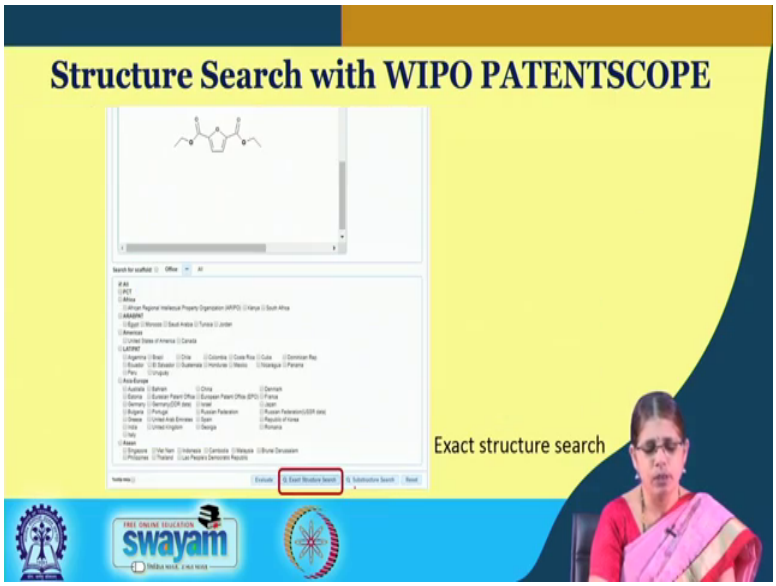


There is also this option of the exact structure search which is there is no deviation from this main molecule we are looking for patents which exactly represented this particular structure. In which case you click on the button, they exact structure search which gives you the details in relation to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

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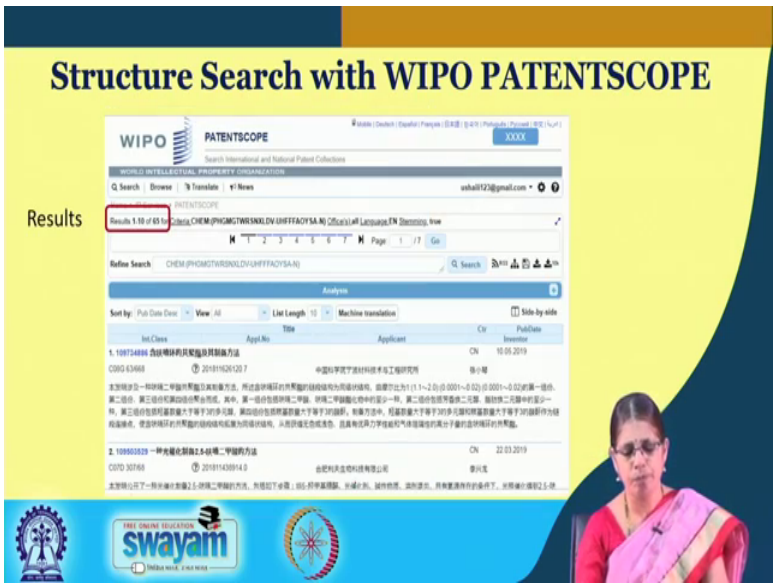


Now there are 65 results which have come out for this particular structure and you can see some patents are in different country languages, you can use the translate option to get the details in relation to the patent.

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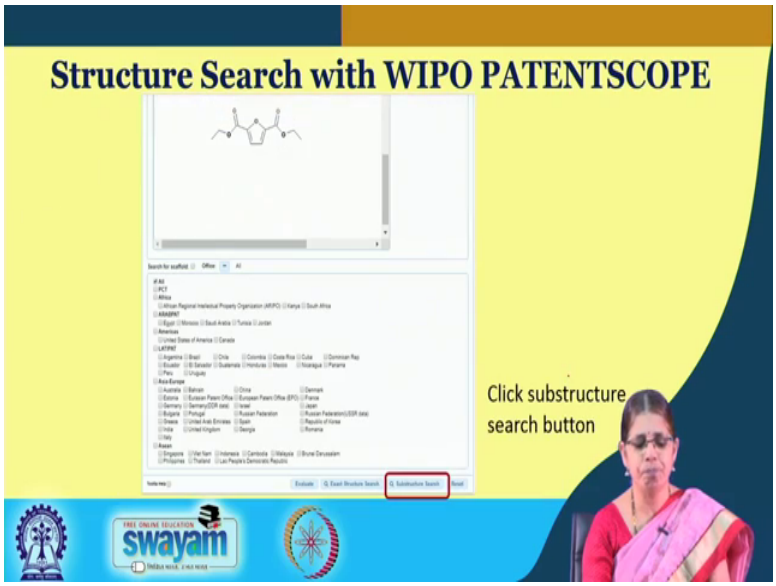


Now if you look for a sub structure search button, it gives you various facets of the same molecule in different forms.

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And this is how you can actually look at the different structures. So, the sub structure option gives you the various ways in which the molecule can be found or the forms can be realized. Look at the different variations of these particular molecules that are presented to you. And in the area of chemistry one can understand that there could be various species in relation to a particular structure.

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

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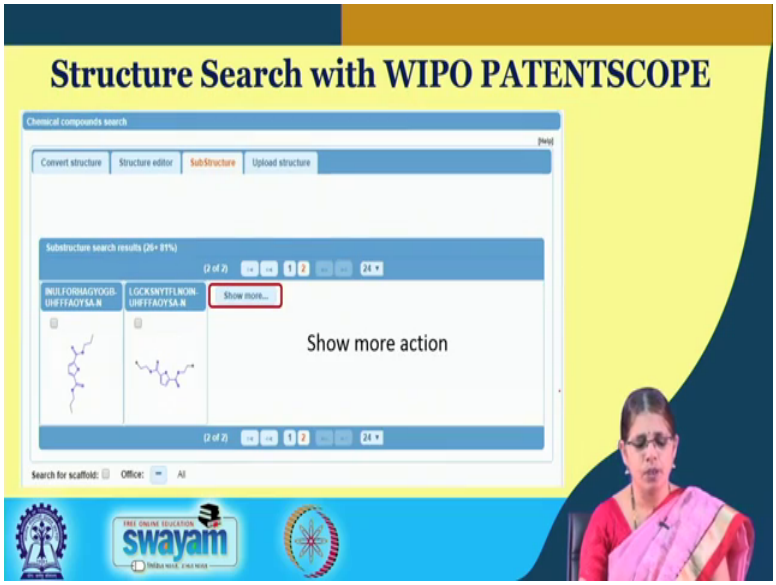


Moving on; so, you can have n number of structures like this drawn using the sub structure option and this is something which is a very enhanced tool that is available for us to today can do this search.

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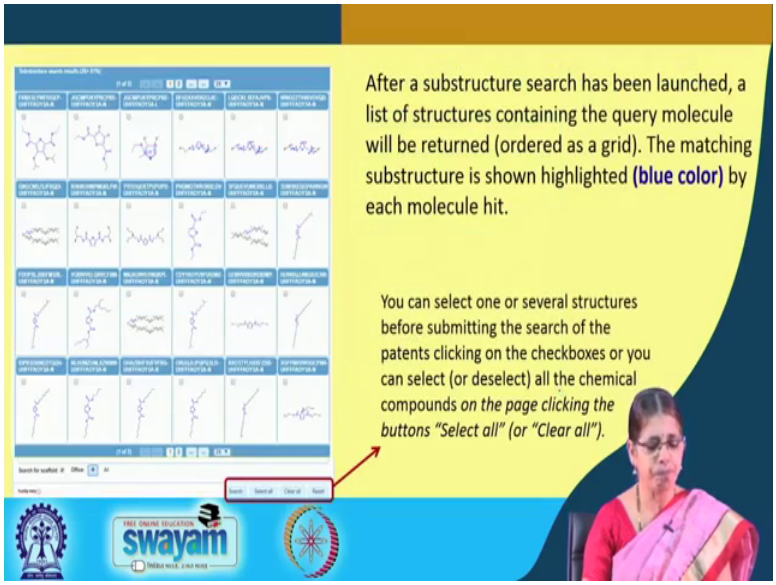


Look at the different options that are available on this particular sub structure search. So, what happens is you get a list of all the buttons all the buttons available, now you can

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

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.

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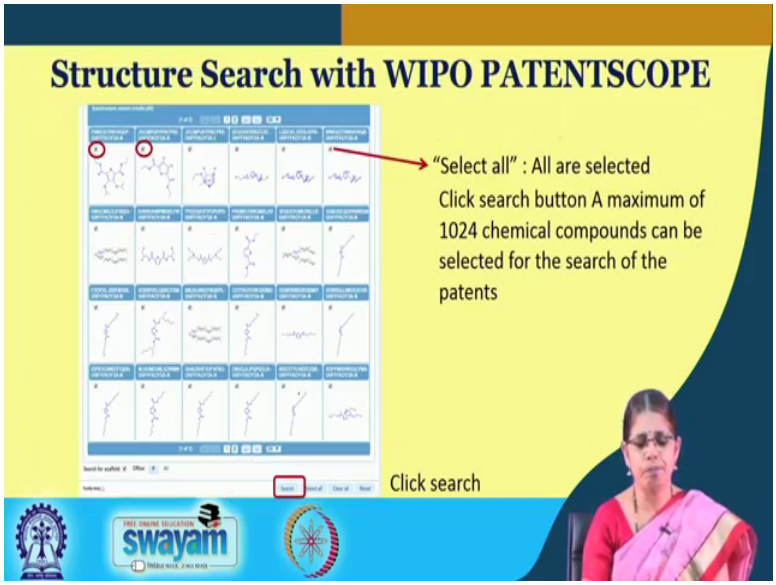


So, one can look for a select all option in which case you have a maximum of 1024 chemical compounds that can be actually searched for. So, what do you do? You click on the search button to generate the patents that are available with respect to any of these.

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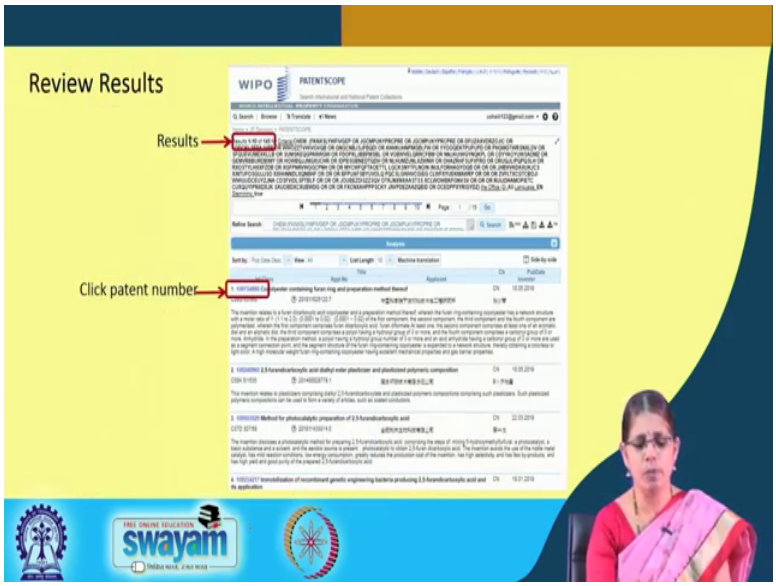


Now these are the results presented to you. So, we have about 145 different patents that are relevant for this particular search. Now the different hits that you have got you can analyze them for instance if you click on the patent number you will get the details again of the patent information and the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

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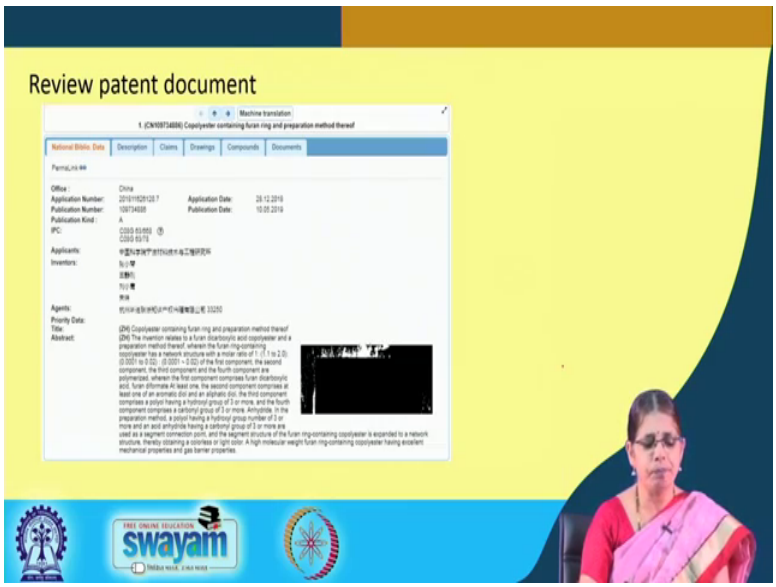


So, here you can find the data the entire bibliographic data, the claims drawings all that information in that particular window. One of the important things in relation to building a good search is the use of nested strings operators and truncation. Let us understand

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

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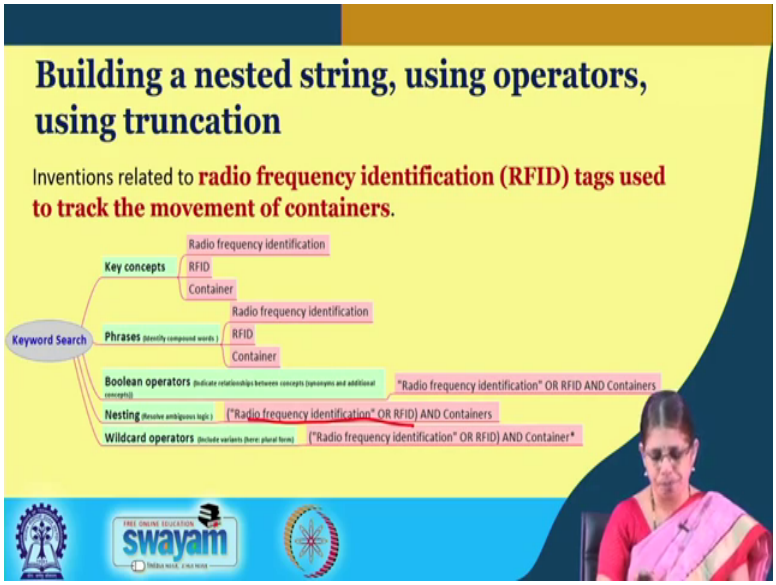


This is one example to indicate how one can efficiently use the different strings and operators. For instance if you are looking at inventions related to radio frequency identification tax, which are used for tracking movement of containers.

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 user 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.

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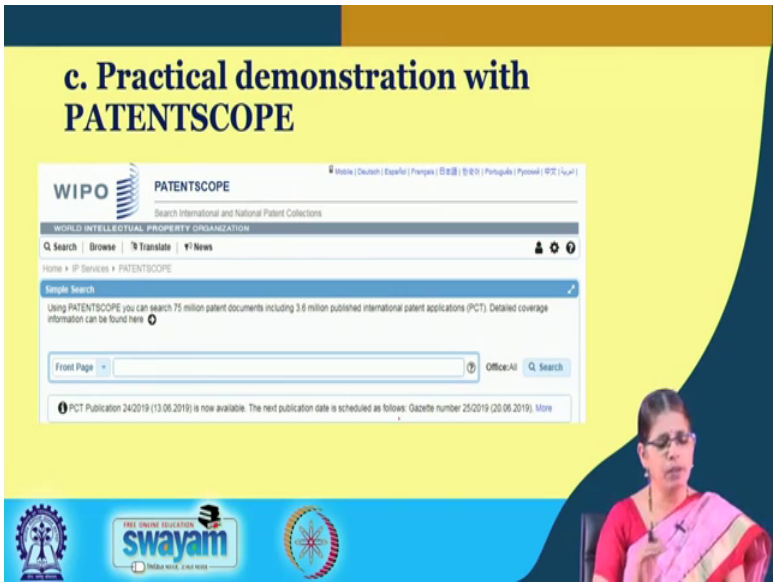


Shall we break it here now for the next lecture?

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.

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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.

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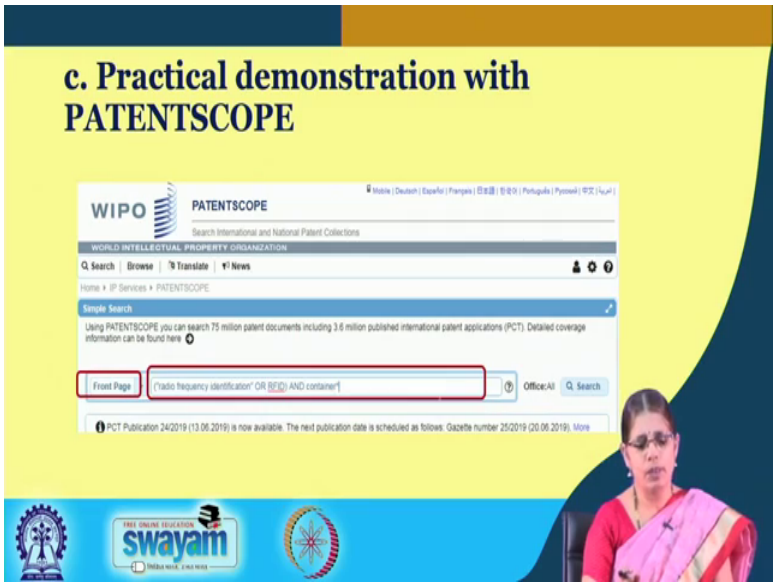


You can put the nested keyword set in this particular window and look for it search.

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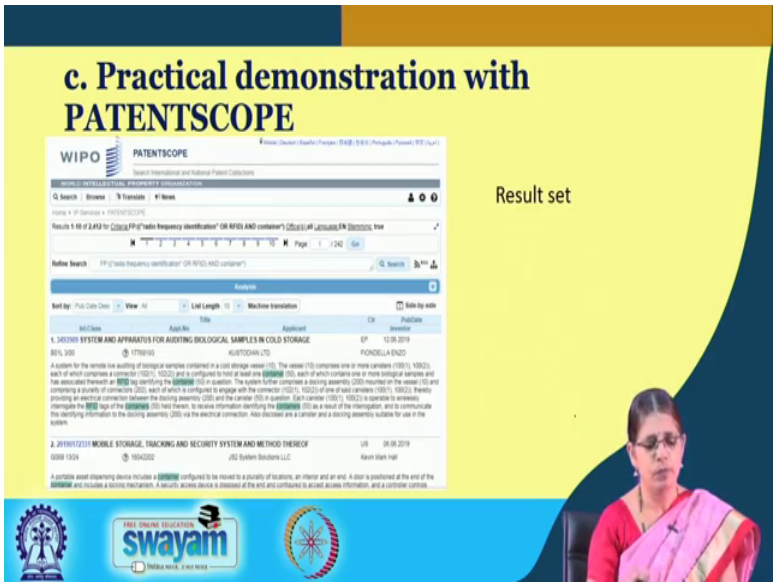


What comes out is the list of patents that are actually around 2400 and 12 patents listed for Radio Frequency Identification or RFID and container this is a large set of hits. So, the result set provided to you in a set of continuing pages under the search hit list.

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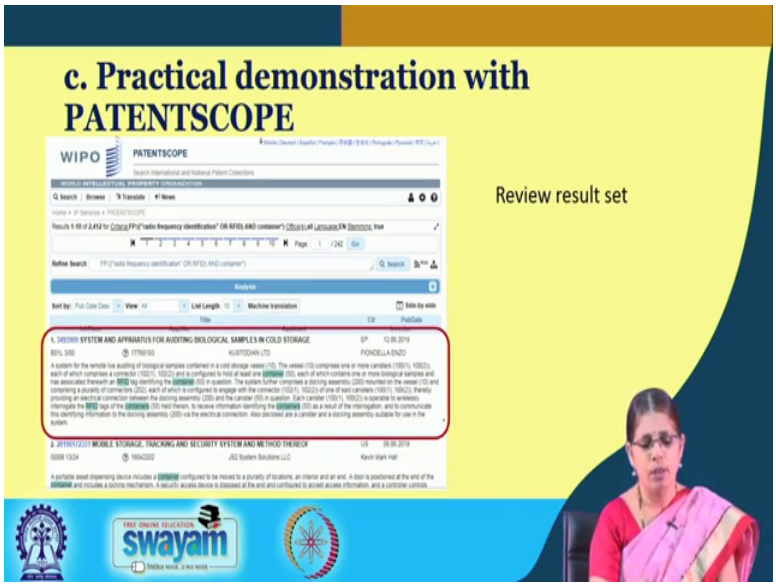


It is important to now review the result set. One is it for the reason that whether it is relevant to the search that has been undertaken. Now one advantage that you get these days is that you have what we call the keyword highlighting in the databases that is provided. So, here you are looking at for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

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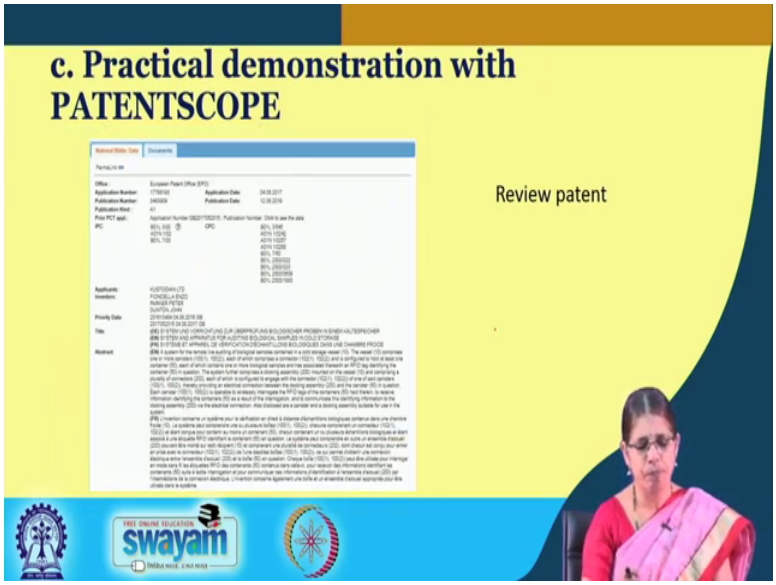


Based on the hits that are actually collected, one can actually look at the review of each of those patents relevant to the particular area.

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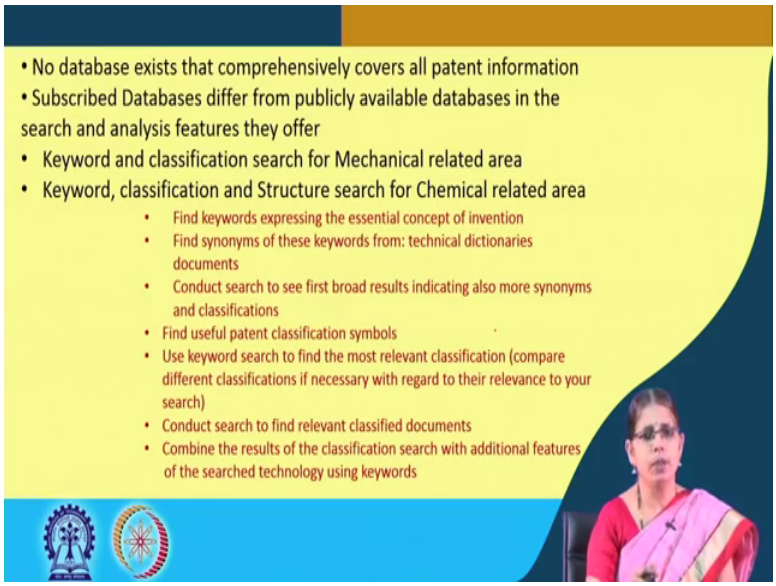


So, the summary of the lecture is as follows. There are several databases which are provided by the on subscription mode and there are essential differences between subscribed databases and the publicly available databases. No database is comprehensive in to cover all type of patent information, this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

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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.

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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.