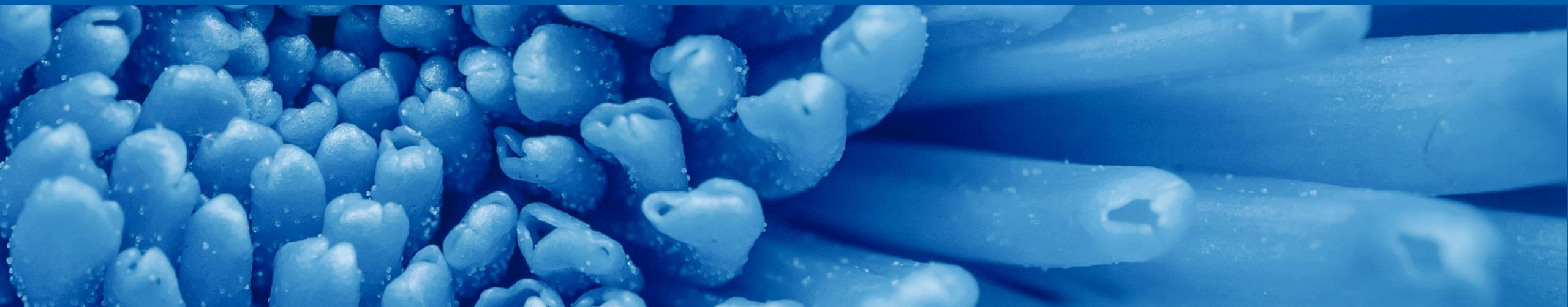


# STN – SCIENTIFIC AND TECHNICAL INFORMATION NETWORK

The Patent Information Service  
For Professional Searching

# AGENDA

- FIZ Karlsruhe and STN
- Case Study      Chemical Structure Search  
                        Numeric Property Search  
                        Automated Search with Scripts
- Full text Annotators
- Relevance Ranking
- FIZ Search API



# FIZ Karlsruhe at a glance



**Founded** 1977 (Member of the Leibniz-Association)

**Shareholders** German Federal Government, Federal State of Baden-Württemberg, Max-Planck Society, Fraunhofer-Gesellschaft, the German societies on Informatics, Mathematics, Physics and Engineering

**Our Mission** to provide scientific information to scientists and researchers, to develop appropriate products and services and to conduct applied research.

# STN – The Scientific and Technical Information Network



 **FIZ Karlsruhe**  
Leibniz Institute for Information Infrastructure



 **CAS**  
A DIVISION OF THE  
AMERICAN CHEMICAL SOCIETY

- **Information service** developed and operated by FIZ Karlsruhe and Chemical Abstracts Service since 1984.
- **Content**
  - +100 databases with +1.6 billion documents
  - chemistry, pharma, life sciences, technology
  - non patent literature, patents and utility models
- **Uniqueness**  
Combination of leading **chemical structure, value-added and full text patent databases** as well as **non-patent literature (NPL) databases with sophisticated retrieval capabilities**

# STN supports all steps in the IP value chain

State-of-the-art  
**Research &  
Development**



Competitor and technology analysis  
**Portfolio-  
Management**



Patent Monitoring  
**Intellectual Property  
Protection**



**Patent Filing**  
Patentability



**Commercialisation**  
Freedom to Operate

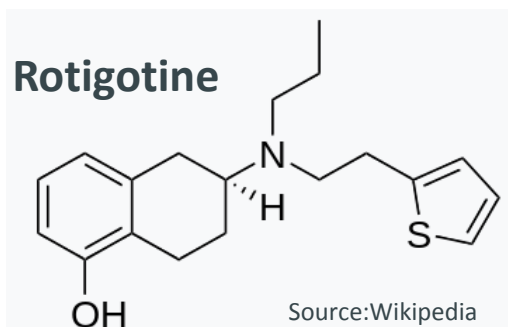


# STN facilitates business critical decisions

- **Unique content on one platform**
  - The complete CAS content collection
  - Derwent World Patents Index<sup>®</sup>
  - Broad patent and non-patent collection
- **Unmatched search power and precision**
  - Very precise text and substance search
  - Advanced analysis and refinement
- **Industry-leading support and reliability**
  - Knowledgeable STN representatives worldwide
  - 100% confidential searching



# Chemistry in patents – high diversity !



Structure formula

## Different names

**Chemical Name:** (6S)-6-[propyl(2-thiophen-2-ylethyl)amino]-5,6,7,8-tetrahydronaphthalen-1-ol

**International Non-proprietary Name (INN):** Rotigotine

**Trade Name:** Neupro<sup>®</sup>, Leganto<sup>®</sup>, Nubrenza<sup>®</sup>

**CAS Registry Number:** 99755-59-6

**Computed descriptors:** CCCN(CCC1=CC=CS1)C2CCC3=C(C2)C=CC=C3O

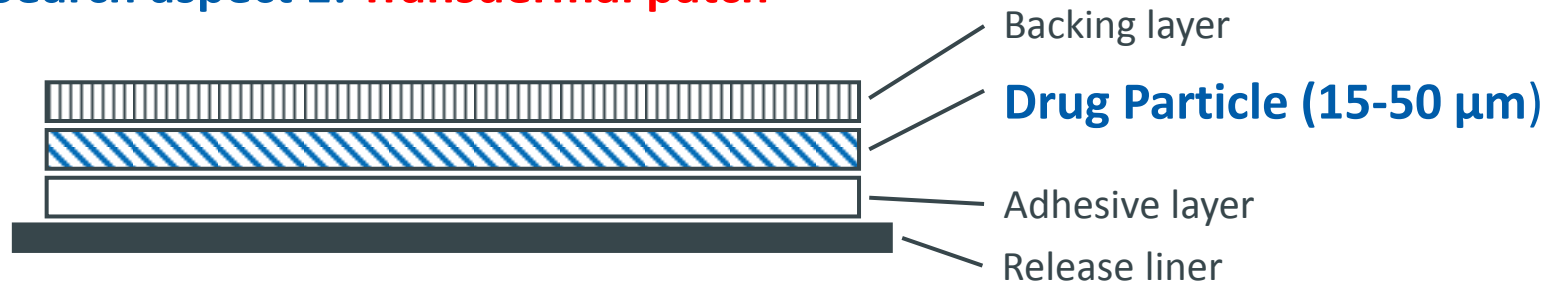
## Different representations & locations

Text, images, tables, reaction schemes, attachments

# Example – patentability of an anti-Parkinson transdermal patch

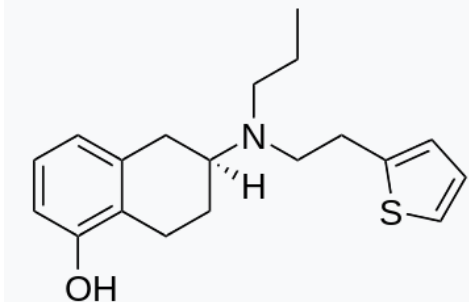
**Patentability** of a transdermal patch for the treatment of Parkinson disease with **Rotigotine** solved in polyvinylpyrrolidon (**PVP**) **particles** of the size from **15 to 50  $\mu\text{m}$** .

## Search aspect 1: Transdermal patch



## Search aspect 2: chemical structure

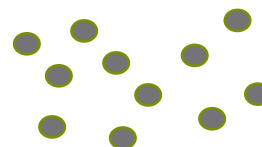
**Rotigotine**  
**(Drug)**



Source:Wikipedia

## Search aspect 3: material, size

**PVP particles of 15-50  $\mu\text{m}$**



## FIZ Numeric Analyzer

Hits in meaningful context

- 17,000 text variants
- 90 different units
- Data normalization
- Precise values, ranges, "less than ..."




# Demo – Search for Chemical Structure and Material Property

- Step 1: Chemical Structure Search for Rotigotine
- Step 2: Refine search by defined drug particle size using FIZ Numeric Analyzer
- For Automatization of individual searches and for monitoring purposes:  
Apply script language



# Patent value-add database and patent full text databases

(19)  **Canadian Intellectual Property Office**  
An Agency of Industry Canada

Office de la Proprieté Intellectuelle du Canada  
Un organisme d'Industrie Canada

(11) **CA 2 532 804** (13) **A1**  
(40) 03.02.2005  
(43) 03.02.2005

## Classification

(21) **2 532 804**  
(22) **22.07.2004**

(51) Int. Cl.:  
*A61K 31/135* (2006.01)      *A61K 31/34* (2006.01)  
*A61K 31/381* (2006.01)      *A61K 31/40* (2006.01)  
*A61K 31/4164* (2006.01)      *A61K 31/44* (2006.01)  
*A61P 25/24* (2006.01)

(85) **17.01.2006**  
(86) **PCT/EP04/008169**  
(87) **WO05/009425**

## Numbers and Dates

(30) **103 34 187.0 DE 26.07.2003**

(71) **SCHWARZ PHARMA AG,  
Alfred-Nobel-Strasse 10  
D-40789, MONHEIM, XX (DE).**

(72) **SHELLER, DIETER (DE).  
SELVE, NORMA (DE).  
BREIDENBACH, ALEXANDER (DE).**

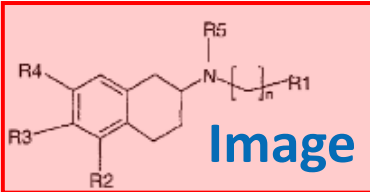
(74) **KIRBY EADES GALE BAKER**

## Names

(54) **2-AMINOTETRALINES SUBSTITUEES UTILISEES EN TRAITEMENT DE DEPRESSIONS**  
(54) **SUBSTITUTED 2-AMINOTETRALIN FOR THE TREATMENT OF DEPRESSION**

(57) **The invention relates to the use of a compound of general formula (I) and the pharmaceutically acceptable salts, racemates or pure enantiomers thereof for the production of a medicinal used to treat depression. The substituents are defined in the description.**

## Title



(I)

## Abstract

# Patent value-add database and patent full text databases

## Patent databases with value-add information

- first page information
- searchable chemical structures or bio sequences
- indexed controlled terms
- Re-written title and abstract

**WPIX** COPYRIGHT 2019 CLARIVATE ANALYTICS on STN AN2005-132407

**TI** Use of 6-substituted amino-tetrahydronaphthalene derivatives for treating depression, particularly unipolar or manic depression, especially use of rotigotine DC B02; B03; B05

**IN** BREIDENBACH A; SCHELLER D; SELVE N; ALEXANDER B;

**PA** (SANL-C) SANOL ARZNEIMITTEL SCHWARZ GMBH

**PI** WO 2005009425 A1 20050203 (200514); CA 2532804 C 20120925


**ADT** WO 2005009425 A1 WO 2004-EP8169 20040722; CA 2532804 C CA 2004-2532804 20040722; ...

**PRAI** DE 2003-10334187 20030726

**IPCI** A61K [I,S]; A61K0031-135 [I,A]; A61K0031-135 [I,A] ...

**AB** NOVELTY - Use of 6-substituted amino-5,6,7,8-tetrahydronaphthalene derivatives (I), as racemates or as pure (R) or (S) enantiomers, and their salts, for preparing a ...  
DETAILED DESCRIPTION - Use of 6-substituted amino-5,6,7,8-tetrahydronaphthalene

**MC** CPI: B06-B01; B06-D01; B06-D06; B06-D17

(19)  **Canadian Intellectual Property Office**  
An Agency of Industry Canada

Office de la Propriété Intellectuelle du Canada  
Un organisme d'Industrie Canada

(11) **CA 2 532 804** (13) **A1**  
(40) 03.02.2005  
(43) 03.02.2005

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(12) **Classification**

(21) **2 532 804**  
(22) **22.07.2004**

(51) Int. Cl.:  
A61K 31/135 (2006.01) A61K 31/34 (2006.01)  
A61K 31/381 (2006.01) A61K 31/40 (2006.01)  
A61K 31/4164 (2006.01) A61K 31/44 (2006.01)  
A61P 25/24 (2006.03)

(85) **17.01.2006**  
(86) **PCT/EP04/008169**  
(87) **WO05/009425**

---

(30) **103 34 187.0 DE 26.07.2003**

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SELVE, NORMA (DE).  
BREIDENBACH, ALEXANDER (DE).

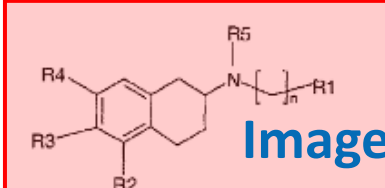
(74) **KIRBY EADES GALE BAKER**

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(54) **2-AMINOTETRALINES SUBSTITUEES UTILISEES EN TRAITEMENT DE DEPRESSIONS**  
(54) **SUBSTITUTED 2-AMINOTETRALIN FOR THE TREATMENT OF DEPRESSION**

(57) The invention relates to the use of a compound of general formula (I) and the pharmaceutically acceptable salts, racemates or pure enantiomers thereof for the production of a medication used to treat depression. The substituents are defined in the description.

**Image**



(I)

# Patent value-add database and patent full text databases

## Patent full text databases

- first page information
- Detailed description
- Claims

**CANPATFULL** COPYRIGHT 2019 LNU on STN. AN 2004024736  
**TI** SUBSTITUTED 2-AMINOTETRALIN FOR THE TREATMENT OF DEPRESSION  
**IN** SCHELLER, DIETER, DE; BREIDENBACH, ALEXANDER, DE  
**PA** SCHWARZ PHARMA AG, D-40789, MONHEIM, DE,  
**AG** KIRBY EADES GALE BAKER, CA  
**PI** CA 2532804 C 20120925  
**AI** CA 2004-2532804 20040722  
**RLN** WO 2004-EP8169 20040722  
**PRAI** DE 2003-10334187 20030726  
**IPCI** A61K0031-135 [I,A]; A61K0031-34 [I,A]; ...  
**CPC** A61K0031-135; A61K0031-40; A61K0031-4164; A61K0031-381; ...  
**AB** The invention relates to the use of a compound of general formula (I) and the pharmaceutically acceptable salts, racemates or pure enantiomers thereof for the production ...  
**CLM** 1. Use of a compound of the general formula I wherein n = 1-5; R2 = OA; R3 and R4 are each independently selected ...  
**DETD** Substituted 2-Aminotetralin for the Treatment of Depression Description According to estimates by ...



# Annotations in Patent Fulltext Documents to Enhance Search Precision

## Numeric Analyser

Identification and normalization of numeric values of physical and chemical units

Numeric search of numbers and units

## Key Term Extraction

Extracting relevant nominal phrases using linguistic and statistical methods

Search in Key Terms, Display of Key Terms

## Claim Structure Recognition

Analysing the hierarchical structure of patent claims

Search in independent claims and claim-groups, display claim structure

## Detailed Description Segmentation

Identifying and segmenting the sections of the detailed description

Search in individual sections of the detailed description

# Numeric Analyzer – precise searching of chemical and physical properties

## Numeric Analyser

Identification and  
normalization of  
numeric values of  
physical and  
chemical units

Numeric search of  
numbers and units

# Key Term Extraction – determine relevant nominal phrase

## Numeric Analyser

Identification and normalization of numeric values of physical and chemical units

Numeric search of numbers and units

## Key Term Extraction

Extracting relevant nominal phrases using linguistic and statistical methods

Search in Key Terms, Display of Key Terms

# Claim Structure Recognition

## Numeric Analyser

Identification and normalization of numeric values of physical and chemical units

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Search in Key Terms, Display of Key Terms

## Claim Structure Recognition

Analysing the hierarchical structure of patent claims

Search in independent claims and claim-groups, display claim structure

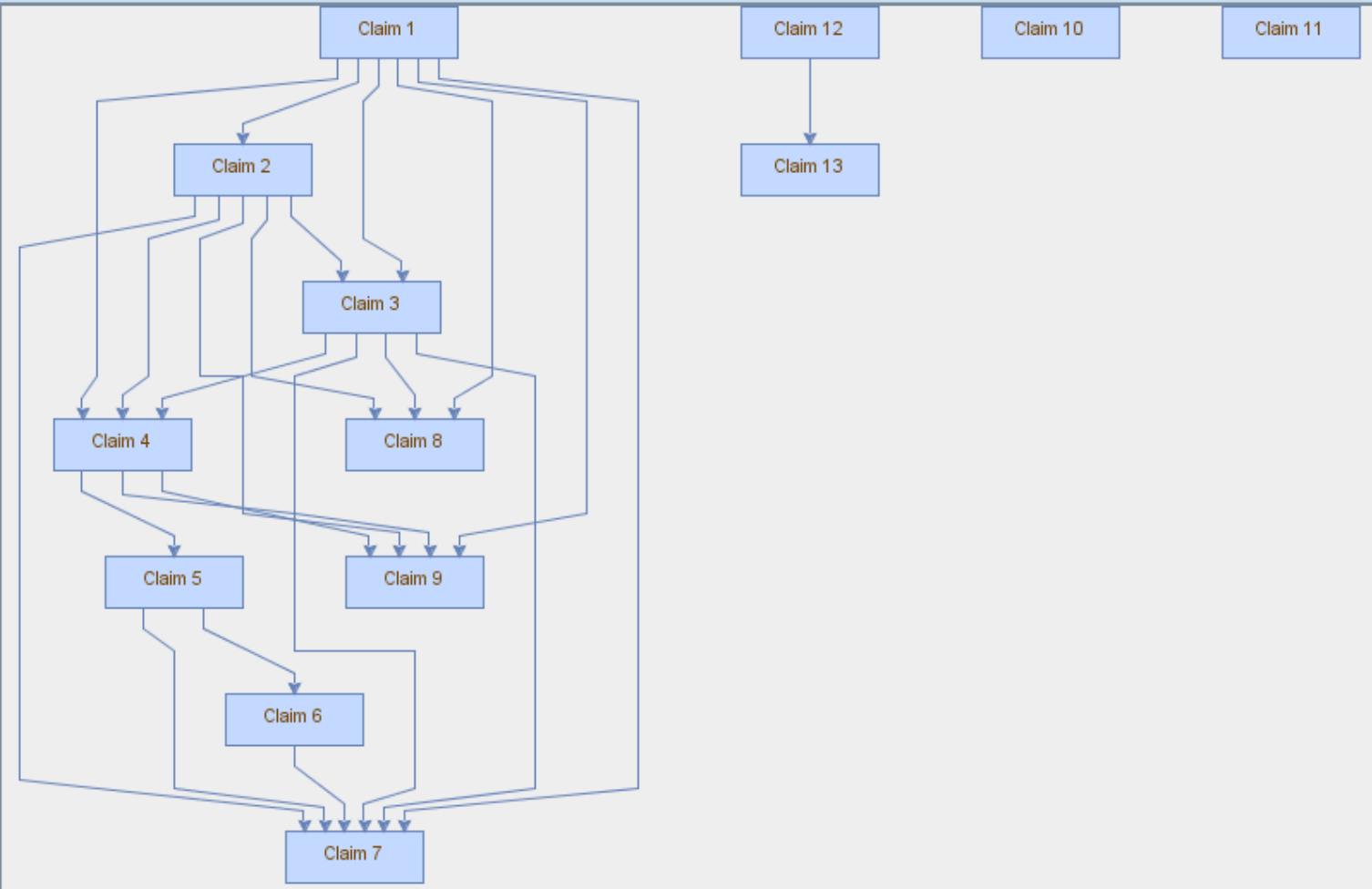


# Claim Structure Recognition

Nu  
An

Identifica  
normaliz  
numeric  
physical  
chemical

Numeric  
numbers



# Detailed Description Segmentation

## Numeric Analyser

Identification and normalization of numeric values of physical and chemical units

Numeric search of numbers and units

## Key Term Extraction

Extracting relevant nominal phrases using linguistic and statistical methods

Search in Key Terms, Display of Key Terms

## Claim Structure Recognition

Analysing the hierarchical structure of patent claims

Search in independent claims and claim-groups, display claim structure

## Detailed Description Segmentation

Identifying and segmenting the sections of the detailed description

Search in individual sections of the detailed description

# Detailed Description Segmentation

Numeric  
Analyser

Key Term  
Extraction

Claim  
Structure  
Recognition

Detailed  
Description  
Segmentation

Identification and

Extracting relevant

Analysing the

Identifying and

<p element\_id="PM1-dt1\_en-p2" num="0002">The invention concerns a numerically steered tool holding device for radiation's treat  
<p element\_id="PM1-dt1\_en-p3" num="0003">She is about special one on the interests of the radiation's treatment of thick, platter  
<p element\_id="PM1-dt1\_en-p4" num="0004">Devices for the swivelling of a tool at a industrial robot or a roboterähnlichen machin  
<p element\_id="PM1-dt1\_en-p5" num="0005">Normally a robot wrist consists of three movement axles. When cutting are sufficient  
<p element\_id="PM1-dt1\_en-p6" num="0006">Robot wrists are for many years and in most different kinematic and constructional c  
<p element\_id="PM1-dt1\_en-p7" num="0007">A wrist for cutting is descriptive in DE 10 2005 041,462. With the help of a larger nu  
<p element\_id="PM1-dt1\_en-p8" num="0008">A comparable solution - based on a parallel crankshaft-and-connecting-rod drive - c  
<p element\_id="PM1-dt1\_en-p9" num="0009">In US 5286006 a chamfer gumption mechanism with two burners is described, with  
<p element\_id="PM1-dt1\_en-p10" num="0010">In JP 02229670 is descriptive a procedure for chamfer cuts and a pertinent device  
<p element\_id="PM1-dt1\_en-p11" num="0011">In DE 69210201 a solution for cooling a tool, with simultaneous sucking of the zers  
<p element\_id="PM1-dt1\_en-p12" num="0012">In accordance with the exemplarily quoted state of the art no for the radiation cuts,  
<p element\_id="PM1-dt1\_en-p13" num="0013">Task of the invention is it to create a tool holding device which is cut to the interest  
<p element\_id="PM1-dt1\_en-p14" num="0014">By suitable technical solutions it should be ensured that the transmission play arisi

Segment	Begin	End
TECHFIELD	202	338
BACKGROUND	339	8210
SUMMARY	8211	13999
DETDEMBODEMENT	14000	14128
DRAWINGFIG	14129	14778
DETDEMBODEMENT	14779	20256

# Relevance ranking for efficient evaluation of search results

Rerank: RF Ranking method: BM25

optic photonic nanooptic  QL

# ▲	QR	RF		S1	S2	QL
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hydrophobic surface used in article e.g. slips comprises surface texture and coating disposed on te...	66...	0.0	0
2	<input type="checkbox"/>	<input type="checkbox"/>	Article for micro-fluidic device, comprises substrate with wettability characteristic, nano-structure a...	59...	0.0	0
3	<input type="checkbox"/>	<input type="checkbox"/>	Optically high structure for e.g. flexible electronic structure, comprises s...	57...	0.0	0
4	<input type="checkbox"/>	<input type="checkbox"/>	Composite m nsional assemblies of skeletal structures comprising nan...	56...	0.0	0
5	<input type="checkbox"/>	<input type="checkbox"/>	Nail varnish nail varnish coating on nail surface comprises nail varni...	56...	0.0	0
6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Coating composition for forming nanocomposite film for e.g. LCD, LCD insulated panel system and...	51...	0.0	0
7	<input type="checkbox"/>	<input type="checkbox"/>	Coating plastic surfaces, preferably transparent or non-transparent surfaces of thermoplastic plasti...	50...	0.0	0
8	<input type="checkbox"/>	<input type="checkbox"/>	Forming a lithium-ion battery (LIB) component, comprises providing at least one substrate structur...	48...	0.0	0
9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Composition useful for making coating and for making polyurea-nanocomposites for coatings for i...	47...	0.0	0
10	<input type="checkbox"/>	<input type="checkbox"/>	Apparatus useful to produce carbon-containing molecules (that are used as sources of renewable ...	46...	0.0	0
11	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Nanostructure composition in nano structure film layer, comprises nanostructures, one reactive dil...	46...	0.0	0
12	<input type="checkbox"/>	<input type="checkbox"/>	Coating useful as hydrophobic self-cleaning coating to form two-layers or three-layers coated pro...	46...	0.0	0
13	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Growing nanostructures useful in composite structures involves exposing portion of growth substr...	45...	0.0	0
14	<input type="checkbox"/>	<input type="checkbox"/>	Coating material with base fluid containing dispersed hollow ceramic micro-spheres coated with n...	45...	0.0	0
15	<input type="checkbox"/>	<input type="checkbox"/>	Spinning ring used to support a traveler, includes bearing surface coated with layered structure co...	43...	0.0	0
16	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Composite coating composition for applying to substrate including gears, ball valves, comprises lu...	43...	0.0	0
17	<input type="checkbox"/>	<input type="checkbox"/>	Composition used in nano structure film which is useful in LCD comprises nanostructure, and thiol...	43...	0.0	0
18	<input type="checkbox"/>	<input type="checkbox"/>	Composite useful in fabricating high-strength fibers for textile industry comprises nylon nanocomp...	42...	0.0	0
19	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dry milling particulates involves exfoliating layered particulate material to have specific particle siz...	42...	0.0	0
20	<input type="checkbox"/>	<input type="checkbox"/>	Coating composition for e.g. monuments, textiles, metals, stones, and ceramics comprises a partic...	42...	0.0	0

Reranking with additional search terms

Display results set

Term	Central
▼ Query	<input checked="" type="checkbox"/>
coating	<input checked="" type="checkbox"/>
coating's	<input type="checkbox"/>
coatings	<input type="checkbox"/>
composite	<input type="checkbox"/>
composited	<input type="checkbox"/>
composites	<input type="checkbox"/>
compositing	<input type="checkbox"/>
composition	<input type="checkbox"/>
compositions	<input type="checkbox"/>
engineered	<input type="checkbox"/>

Hit terms in document

# FIZ Search API provides machine access to high quality patent content

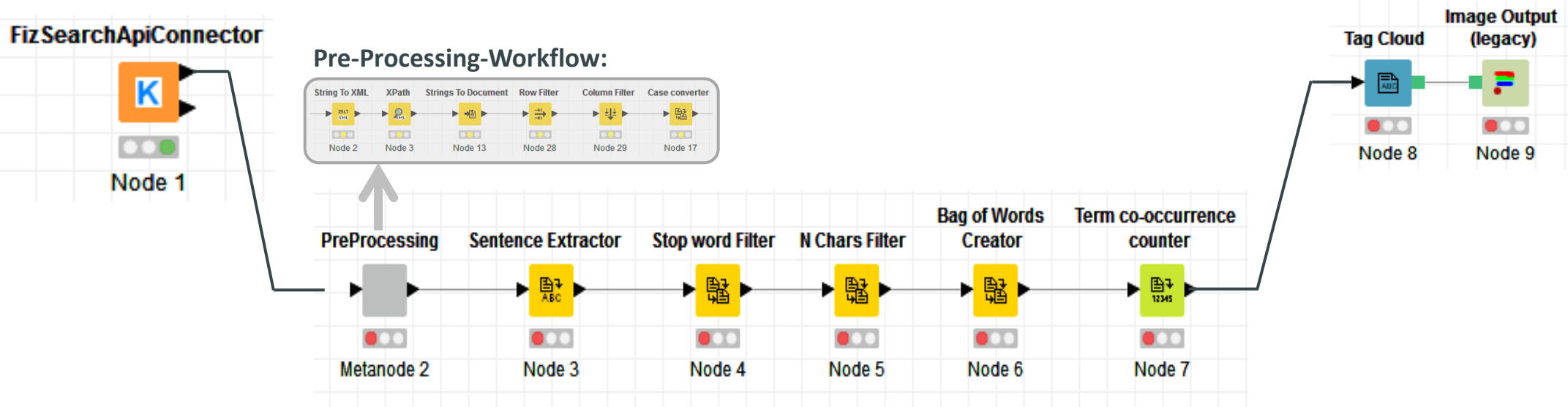
## Machine access to high quality patent information

- Bundle of premium patent and non-patent literature databases available from one provider
- Databases are highly structured and granularly implemented
- Sophisticated search capabilities

## Search API support several potential use cases

- search and retrieval applications of customer in-house systems
- Customer driven alerting applications
- corporate analysis tools
- text- and datamining applications

# Create your customized analytics workflow with KNIME



# Patent and Sci-Tech Information at FIZ Karlsruhe – STN and more

## Benefits using STN

- Powerful retrieval language
- Top three patent family databases on one platform with value-added information
- Outstanding coverage of patent and non-patent literature
- Ideal support for chemical indexing, e.g. structure search, polymer search
- Scripting
- Numeric Property Search and extracted Key Terms

## New Developments at FIZ Karlsruhe

- Additional annotators increase retrieval quality and helps text mining methods
- FIZ Search API: Machine access to high quality patent information
- New tools: Relevance Ranking and Patent Analytics with KNIME

# Thank you!

## Questions?

Contact Thomas Stengel, Dieter Geiß  
Product Management STN  
FIZ Karlsruhe: [helpdesk@fiz-karlsruhe.de](mailto:helpdesk@fiz-karlsruhe.de)  
Support and Training: [www.stn-international.de](http://www.stn-international.de)

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Leibniz-Institut für Informationsinfrastruktur GmbH  
[www.fiz-karlsruhe.de](http://www.fiz-karlsruhe.de)



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Leibniz Institute for Information Infrastructure

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Leibniz  
Gemeinschaft