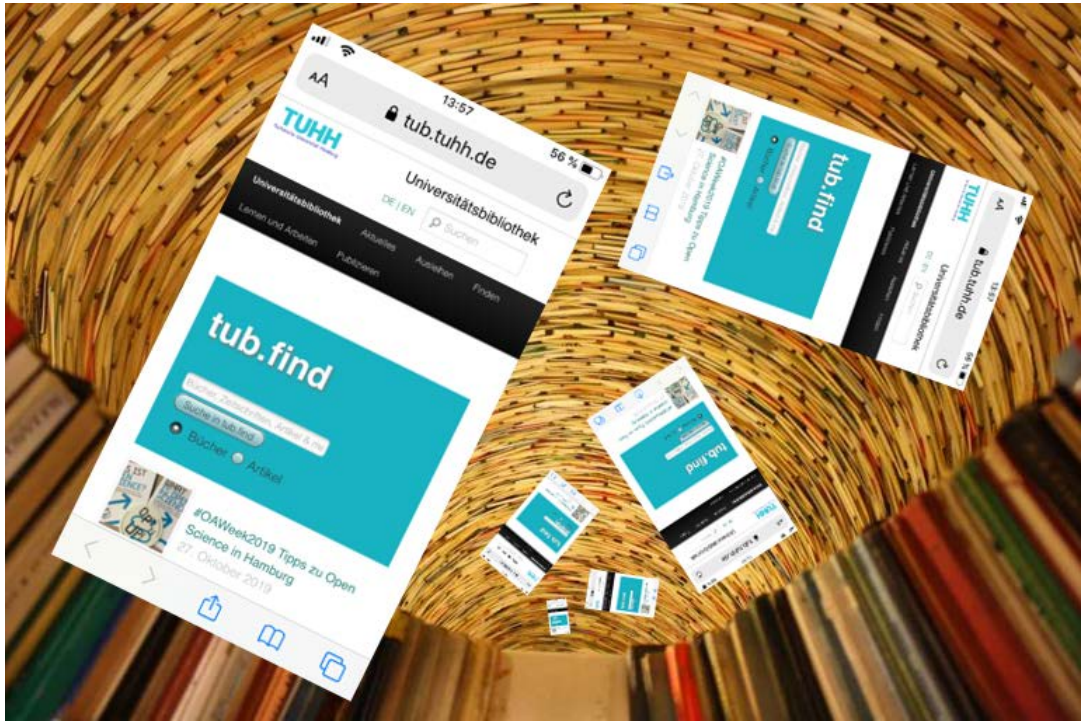
TUHH
Technische Universität Hamburg

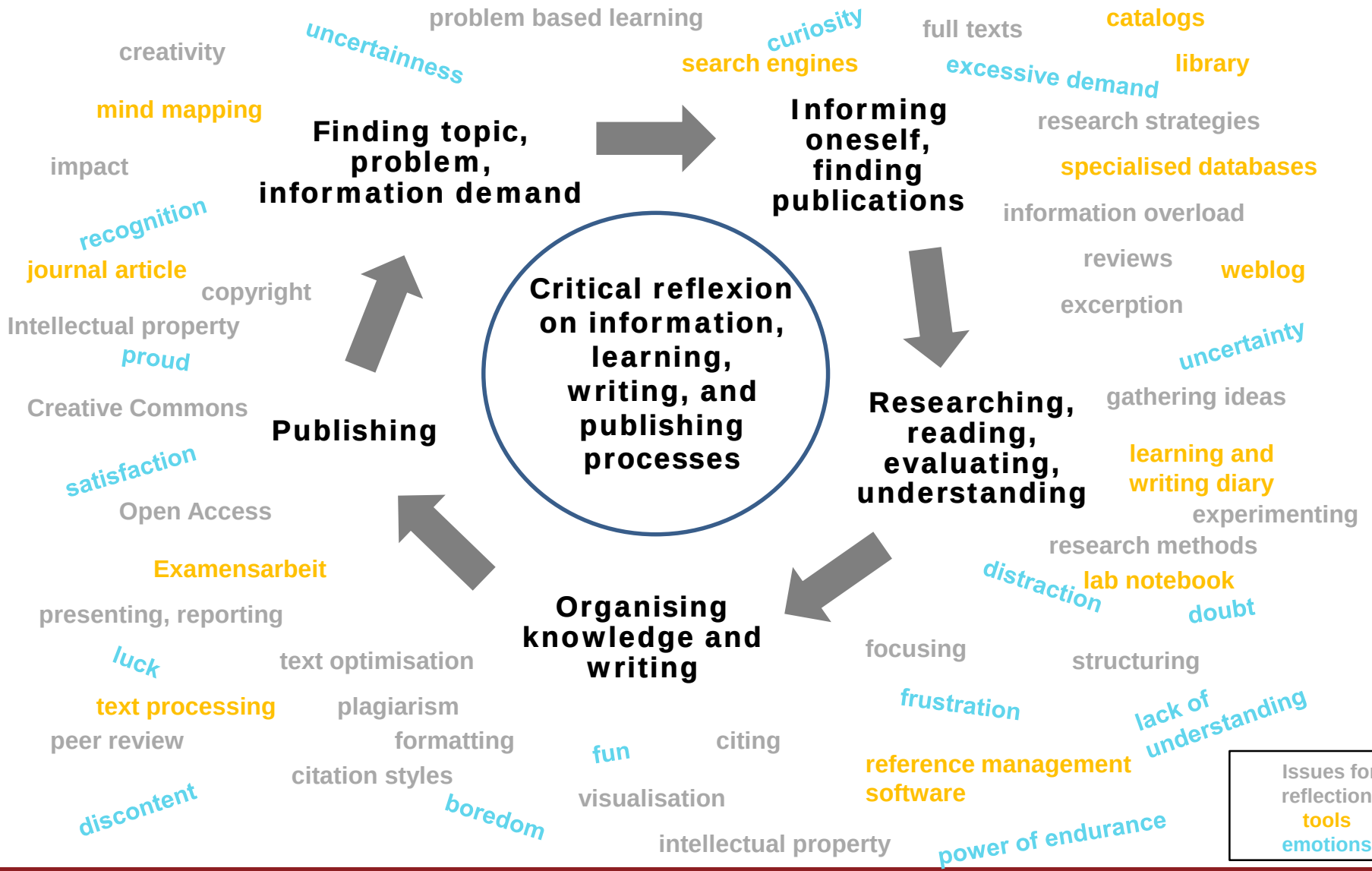
tub.



Finding and managing process engineering information

Life cycle of scholarly communication

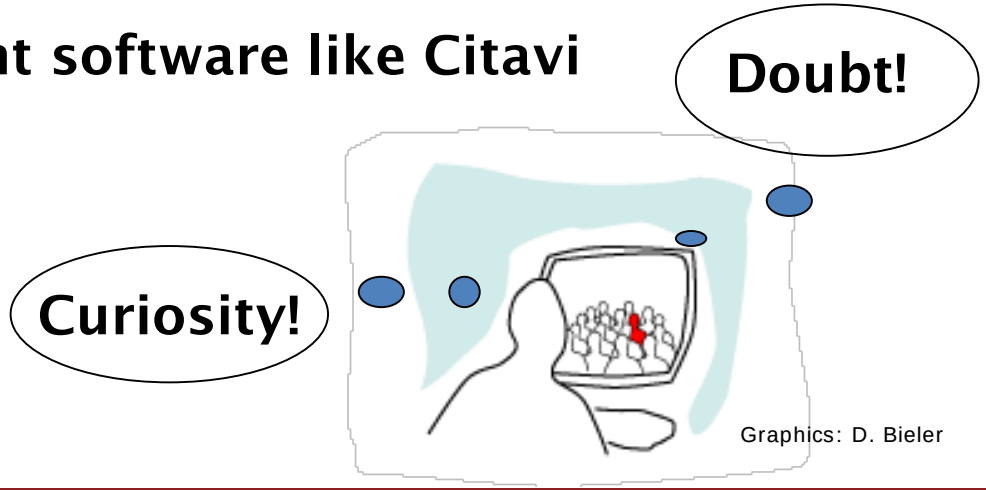
TUHH
Technische Universität Hamburg



Information challenges for academic research

TUHH
Technische Universität Hamburg

- How to be more sure not to miss something essential?
  - Systematically searching for information
  - Using subject-specific databases
- How to get full texts?
  - Availability in TUHH intranet via search engines
  - The library catalog as search engine
- How to cope with information overload?
  - Using reference managent software like Citavi



Graphics: D. Bieler

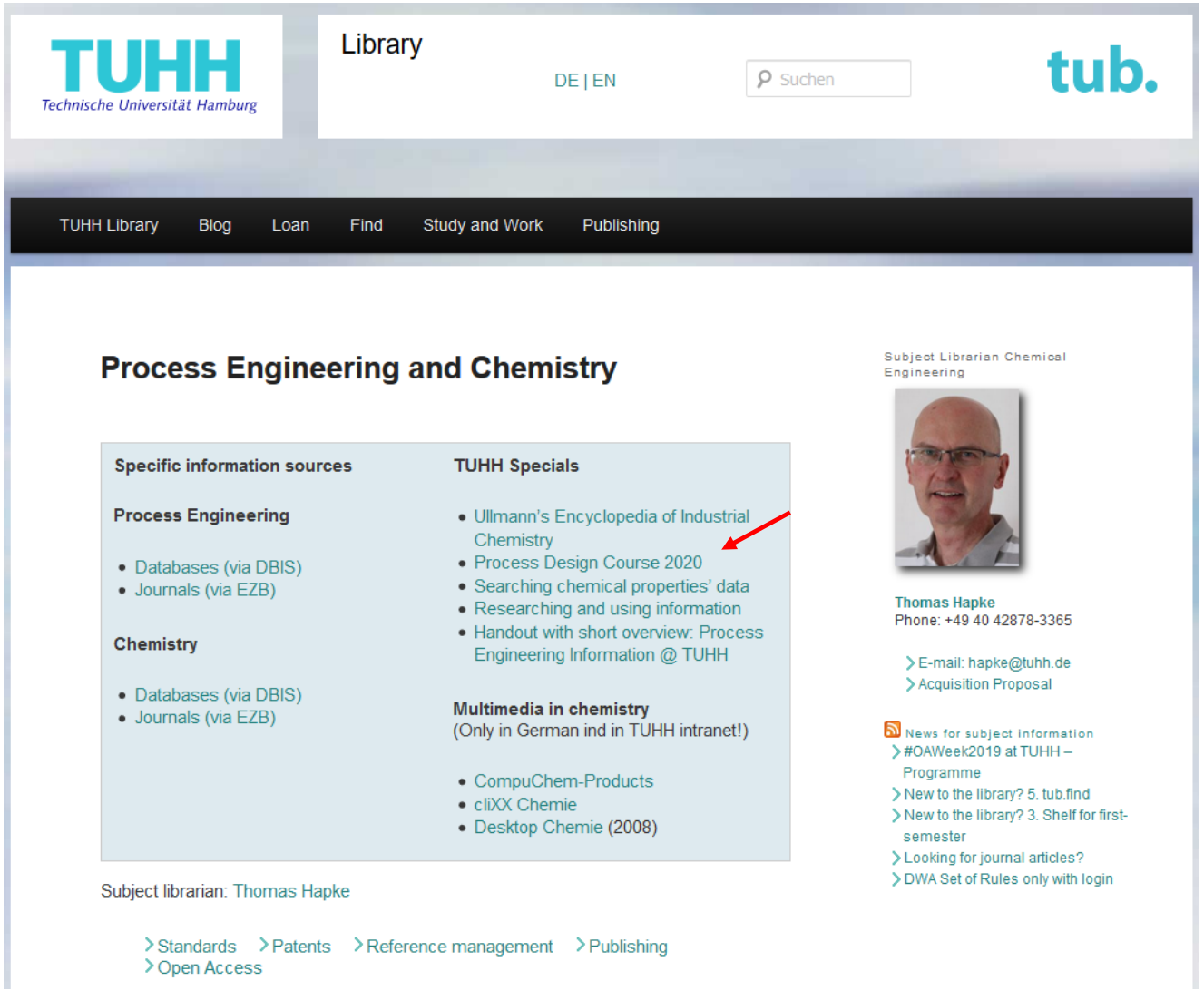
Using encyclopedias and reference works for orientation!

TUHH
Technische Universität Hamburg

- **Ullmann's Encyclopedia of Industrial Chemistry**
  (6. ed., 2002, 40 vols)
  Online within TUHH intranet (2020 ed.)
- **Comprehensive biotechnology**
  (6 Vol., 2. ed., 2011)
  Online within TUHH intranet
- **Comprehensive Renewable Energy**
  (2013, 8 vols)
  Online within TUHH intranet
- **Encyclopedia of industrial biotechnology, bioprocess, bioseparation, and cell technology** (2010, 7 vols)
- **Kirk-Othmer Encyclopedia of Chemical Technology**
  (5. ed., 2004-2007)
- **Encyclopedia of ethical, legal, and policy issues in biotechnology** (2000)

Orientation: Subject information Process engineering @TUBHH

TUHH
Technische Universität Hamburg



https://www.tub.tuhh.de/en/subject-information/process-and-chemical-engineering/

Subject gateways

TUHH
Technische Universität Hamburg

https://www.tib.eu/en/

TIB LEIBNIZ INFORMATION CENTRE FOR SCIENCE AND TECHNOLOGY UNIVERSITY LIBRARY

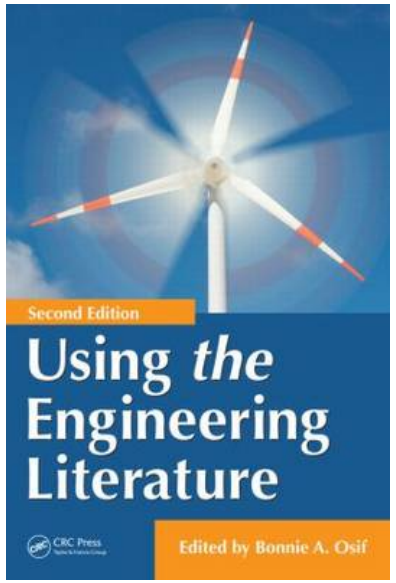
U.S. National Center for Biotechnology Information
https://www.ncbi.nlm.nih.gov/

NCBI

ECONBIZ
Find Economic Literature.

https://www.econbiz.de

A printed source: **Using the engineering literature** / Bonnie A. Osif. 2. ed. 2012.
Shelf number for reference copy: **TEA-804**



Informing – Points to survive

TUHH
Technische Universität Hamburg

1. Orientation before searching.
2. Don‘t trust only one information source.

How to be more sure not to miss something essential?

Dimensions of finding

TUHH
Technische Universität Hamburg

Advanced search options

How?

Specialized databases with costs:
Scopus, Web of Science, TEMA

wti

Web of Science

Scopus

What?

Open web content

tub.find

Approved scholarly content

Google Scholar

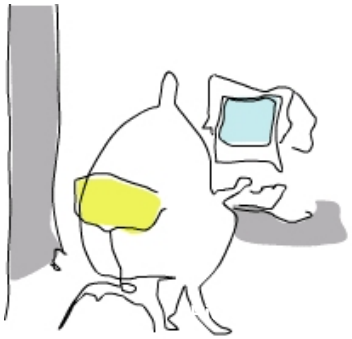
Single search box

Where? Local availability!

Adopted from: Sheila Corrall, John Dove: Web scale discovery and information literacy: competing visions or mutual support? LILAC 2012, Glasgow. http://de.slideshare.net/infolit_group/corrall-dove

The TUHH Library

TUHH
Technische Universität Hamburg



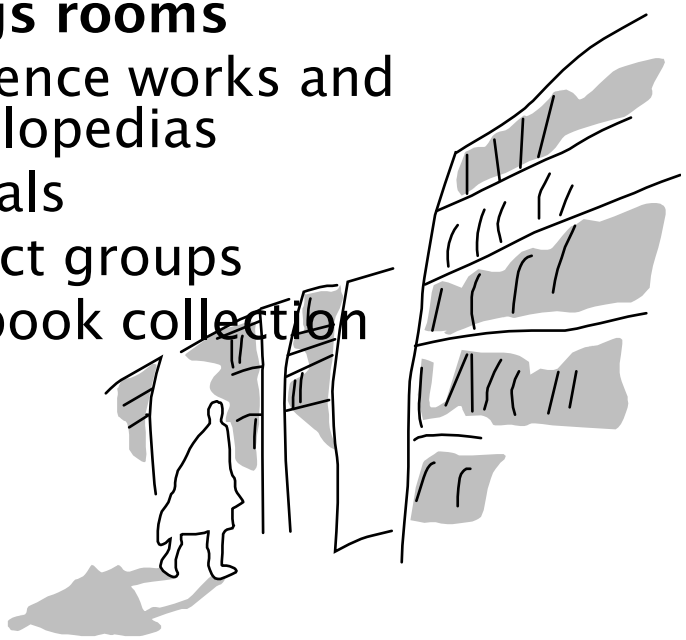
The catalog – the heart of the library!
Access to complete holdings!

Digital Library

- Online-Books
- E-Journals
- Databases

Readings rooms

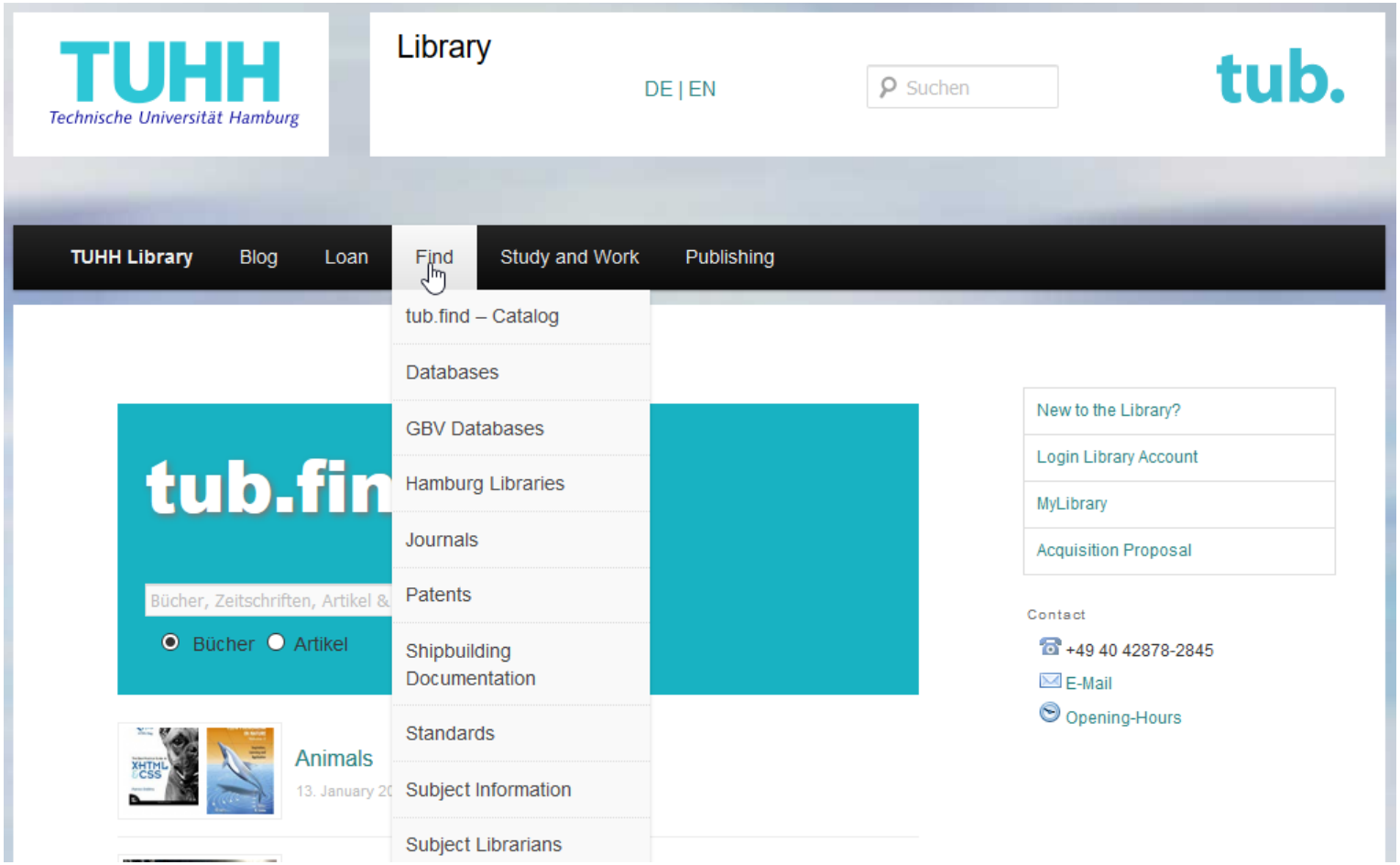
- Reference works and Encyclopedias
- Journals
- Subject groups
- Textbook collection



tub.find

TUHH
Technische Universität Hamburg

The library catalog as search engine

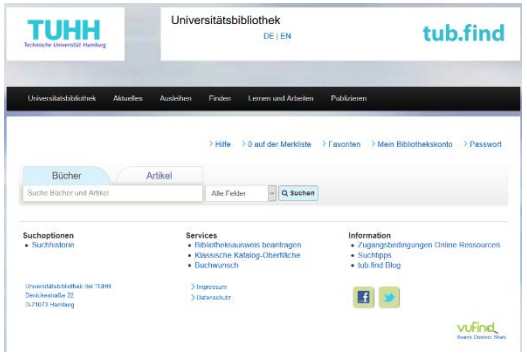


tub.find – simply more!

TUHH
Technische Universität Hamburg

tub.find

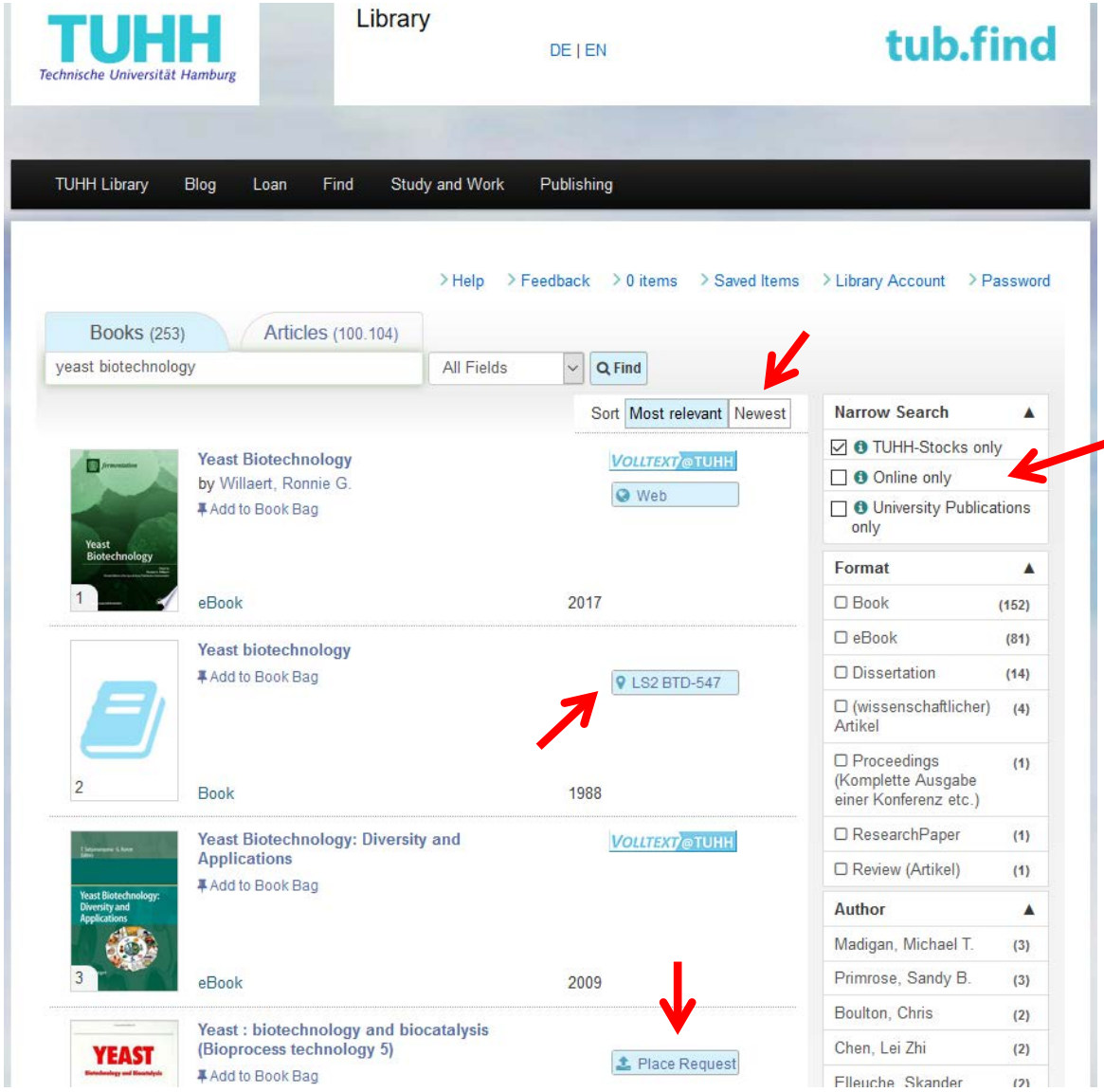
VOLLTEXT@TUHH



- Search engine to find TUHH library holdings and more
- Including also journal articles
- Also for searching within library website and library weblog
- In addition finding resources of the GBV Common Library Network – to order via interlibrary loan
- Search philosophy: Best hits, relevance ranking
- Sorting according descending date possible
- Filtering according format, language, author

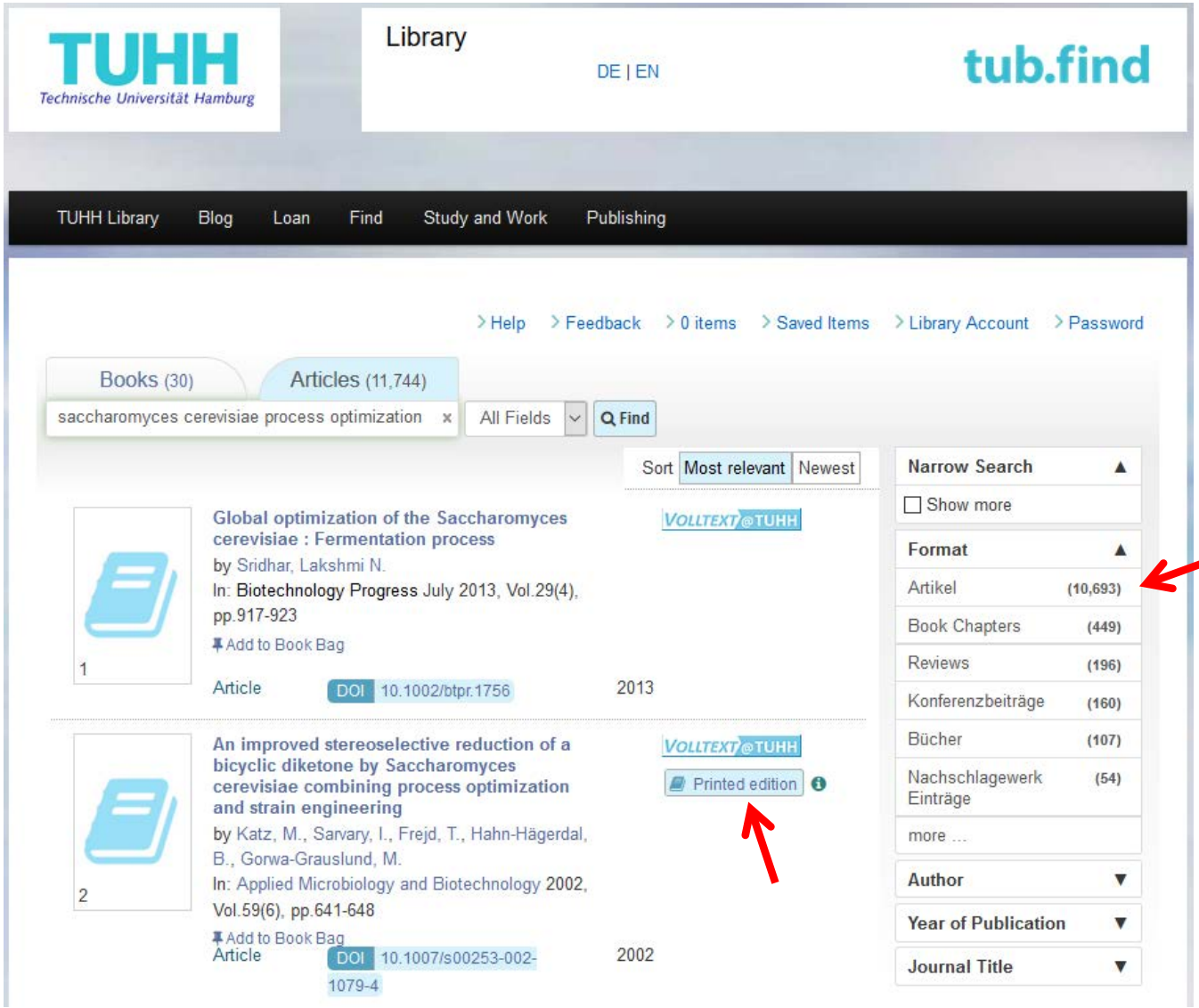
Finding books, also online books!

TUHH
Technische Universität Hamburg



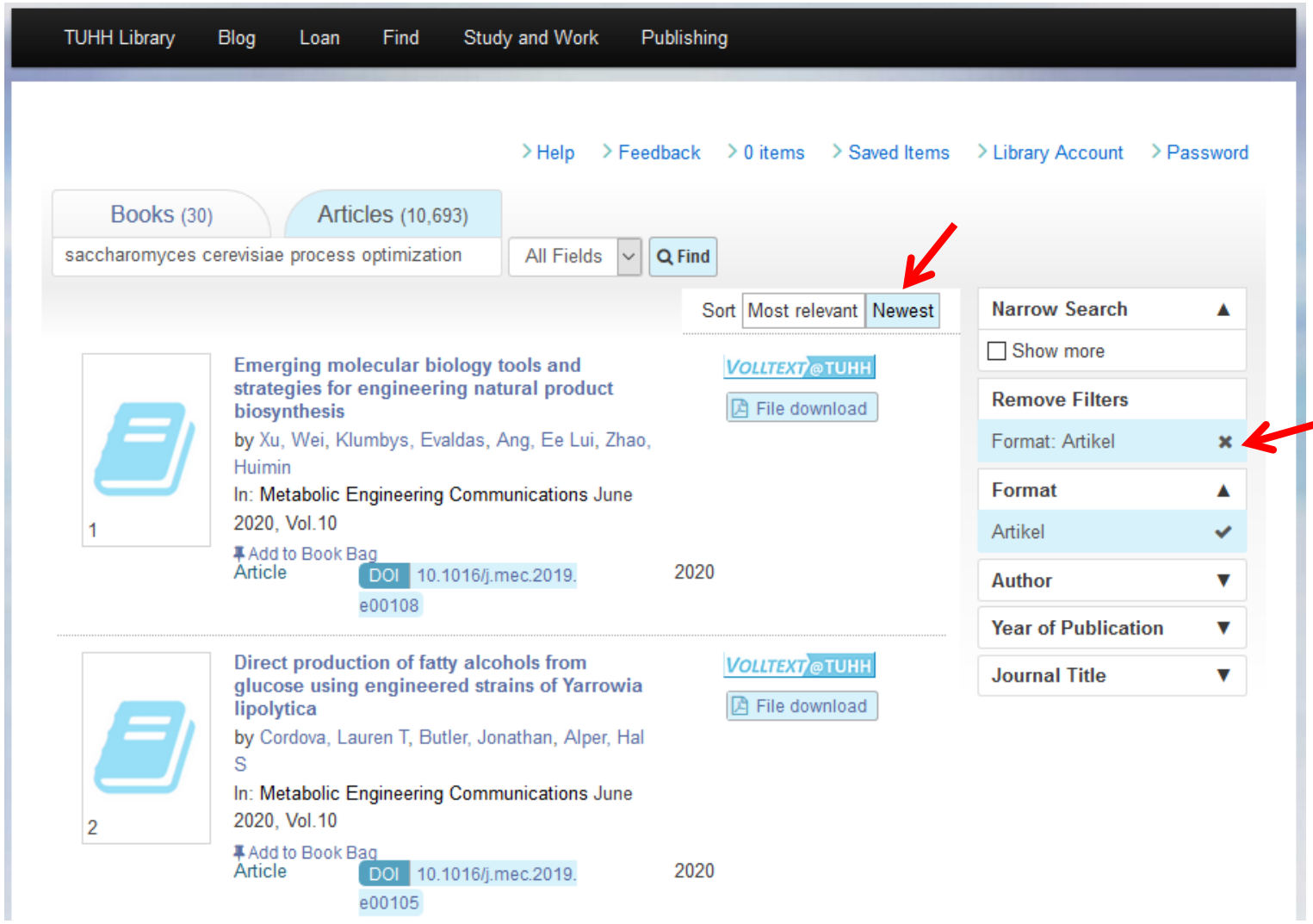
Finding journal articles!

TUHH
Technische Universität Hamburg



Finding most recent journal articles!

TUHH
Technische Universität Hamburg



Looking for books

TUHH
Technische Universität Hamburg

Local library catalog,
e.g. from the TUHH library
https://katalog.tub.tuhh.de/?mylang=en

tub.find

Regional Catalogue of Hamburg
https://gso.gbv.de/DB=2.91/LNG=EN/

beluga
https://beluga.hamburg

GVK - GBV Union Catalogue
https://gso.gbv.de/DB=2.1/LNG=EN/

GBV

WorldCat
https://www.worldcat.org/

KIT Karlsruhe Institute of Technology
KIT Library
Karlsruher Virtueller Katalog
Karlsruhe Virtual Catalog
KVK
https://kvk.bibliothek.kit.edu/

Google books
https://books.google.com

Finding journal articles via subject-specific databases

TUHH
Technische Universität Hamburg

Web of Science with Science Citation Index
- interdisciplinary! Who cited a specific document? How much is a document cited?

Web of Science

TEMA (Technology and Management), wti Frankfurt, formerly Fachinformationszentrum (FIZ) Technik

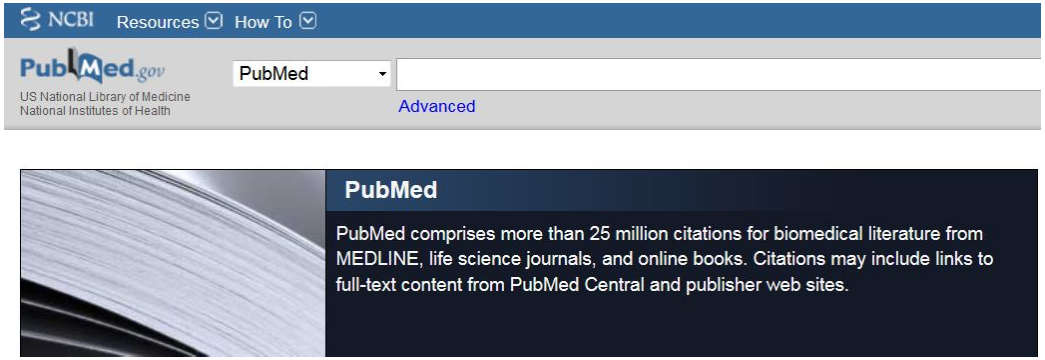
wti

Scopus, Elsevier
- interdisciplinary! Abstracts and citations

Scopus

(Access to these reference databases only within TUHH intranet)

PubMed



Differences

TUHH
Technische Universität Hamburg

Seach engines

Google scholar

- Interdisciplinary sources
- Widely intuitively to use
- Full text often searchable
- Rarely intellectual indexing
- Abbrevating of search terms automatically („stemming“)
- Search philosophy: Best hits, relevance ranking

Subject databases

wti Web of Science

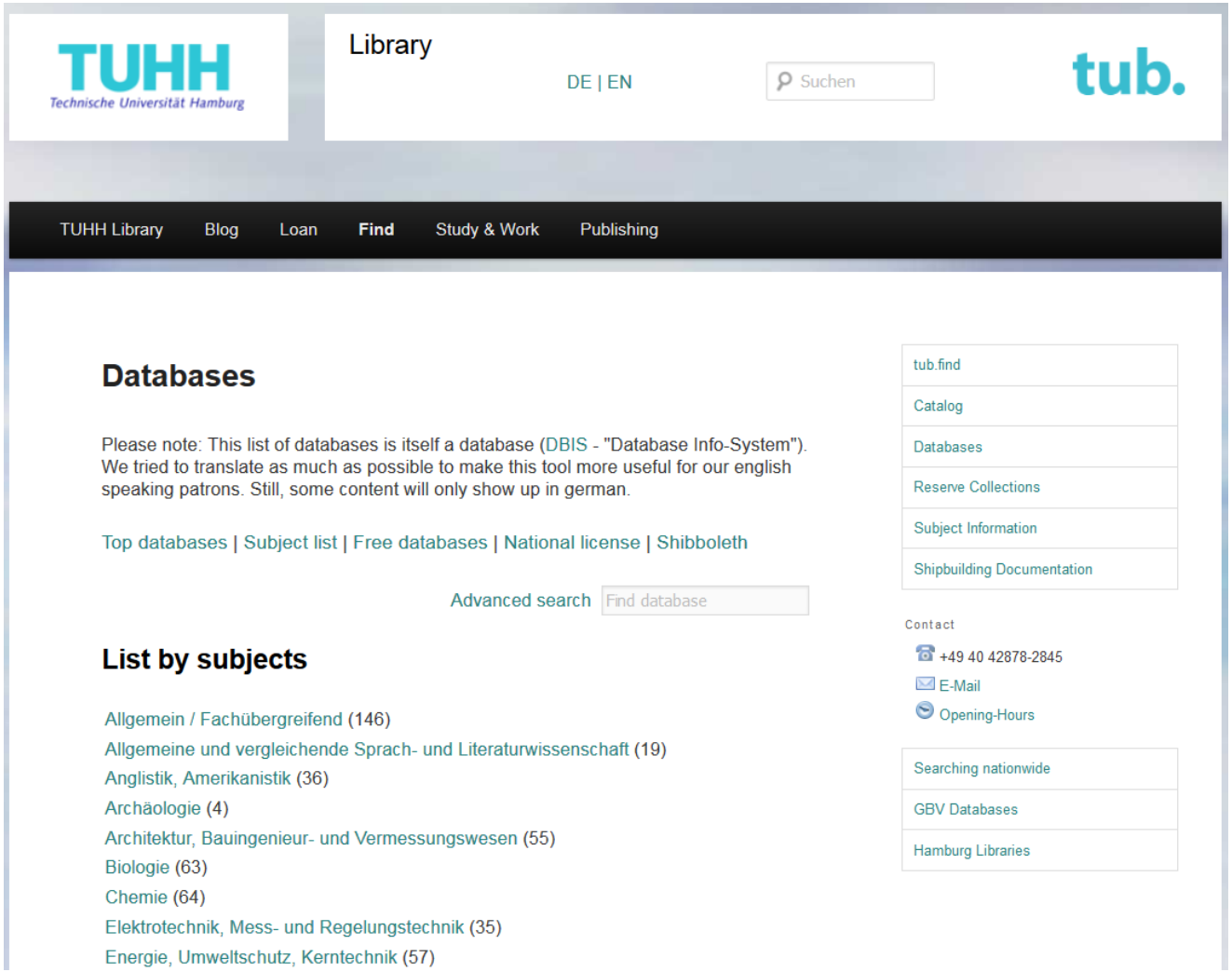
Scopus

- Good for subject-specific searching
- Sophisticated stragegies for searching possible
- Full text not included in search index
- Partially intellectual indexing with descriptors or integrated thesaurus
- Abbreviating search terms with wildcard symbol (often *)
- Search philosophy: Exact hits, Boolean combination of search terms

Use diverse databases and search engines!

Database of databases: Subject overview

TUHH
Technische Universität Hamburg



https://www.tub.tuhh.de/en/find/databases/

Patents for talents!

TUHH
Technische Universität Hamburg

About 60 % of the information in patents is not published elsewhere.

DEPATISnet - the German patent information system at
https://depatisnet.dpma.de

esp@cenet – European Patent Office
https://worldwide.espacenet.com/

US patents via the US Patent and Trademark O
http://patft.uspto.gov/

Europäisches Patentamt
European Patent Office
Office européen des brevets

https://www.tub.tuhh.de/en/find/patents/

Searching for substance properties' data

TUHH
Technische Universität Hamburg

- **In reference works**
  (CRC Handbook of Chemistry and Physics, Perry's Chemical Engineers' Handbook, Aldrich Handbook)

- **In extensive substance property collections („Handbooks“)**
  (Landolt-Börnstein Numerical data and functional relationships in science and technology, Gmelin Handbook of Inorganic and Organometallic Chemistry, Beilstein Handbook of Organic Chemistry)

- **Via the net**
  (e.g. NIST Chemistry WebBook at https://webbook.nist.gov/chemistry/
  - also: Reaxys, SciFinder, both not @TUHamburg)

NIST

More:
https://www.tub.tuhh.de/en/find/substance-property-data/

Specials: Searching for substance properties' data

TUHH
Technische Universität Hamburg

Data on harzardous substances with safety instructions and data sheets containing operational guidelines and hints to laws (e.g. EU) as well as to compulsory and advisory critical levels in the area of hazardous materials!

http://tinyurl.com/merkblaetter

Informing – Points to survive

TUHH
Technische Universität Hamburg

1. Orientation before searching.
2. Don‘t trust only one information source.
3. **In case you are asked for your login or for your credit card, remember the library …**

How to get full text?

VOLLTEXT@TUHH

How to get the full text of this article?

TUHH
Technische Universität Hamburg

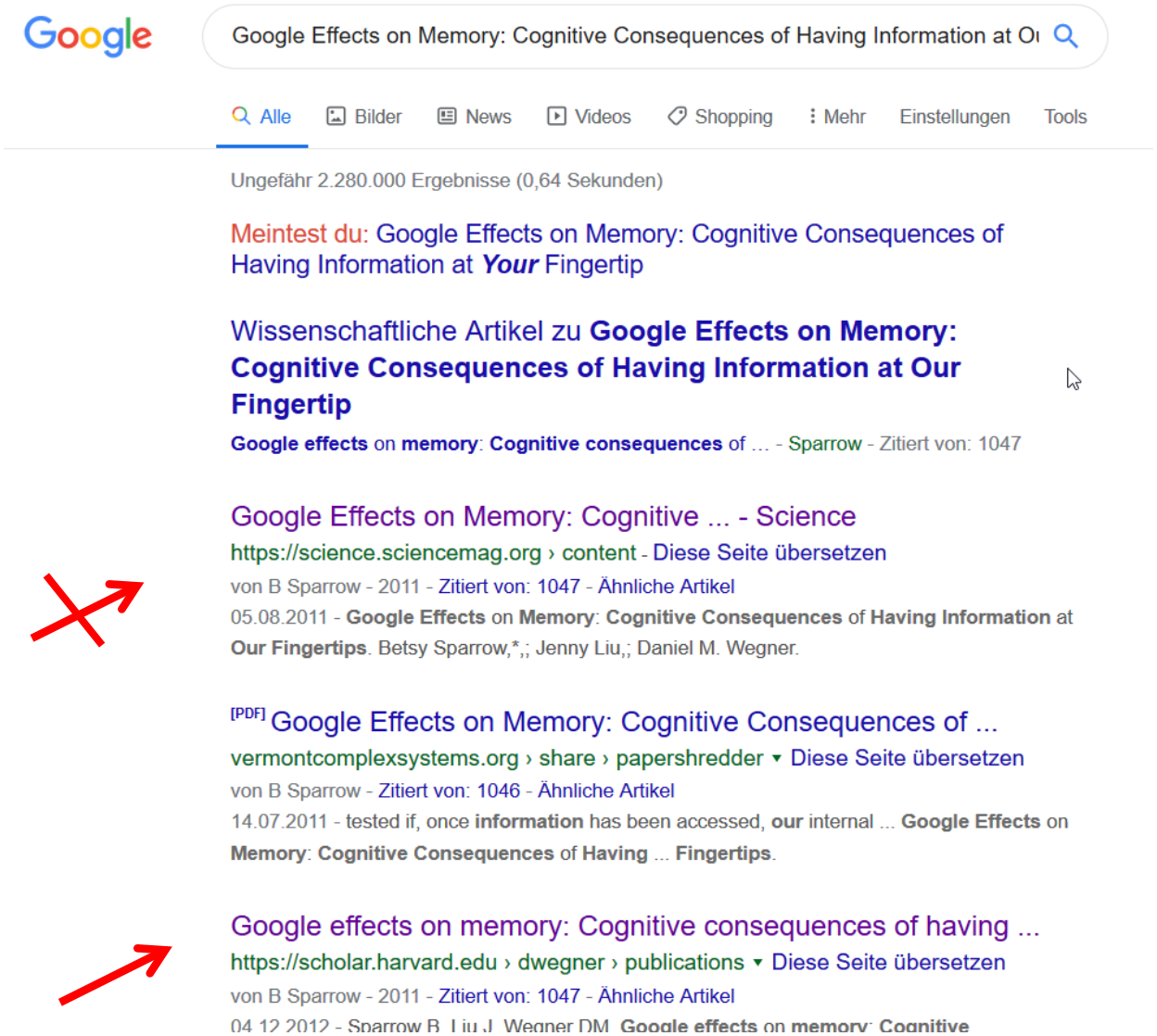
Sparrow, B.; Liu, J.; Wegner, D. M. (2011): Google Effects on Memory: Cognitive Consequences of Having Information at Our Fingertip. Science 333, 6043, 776-778 2011.

Access: Online in Internet as author copy

How to get the full text in case the author would not have put the article online?

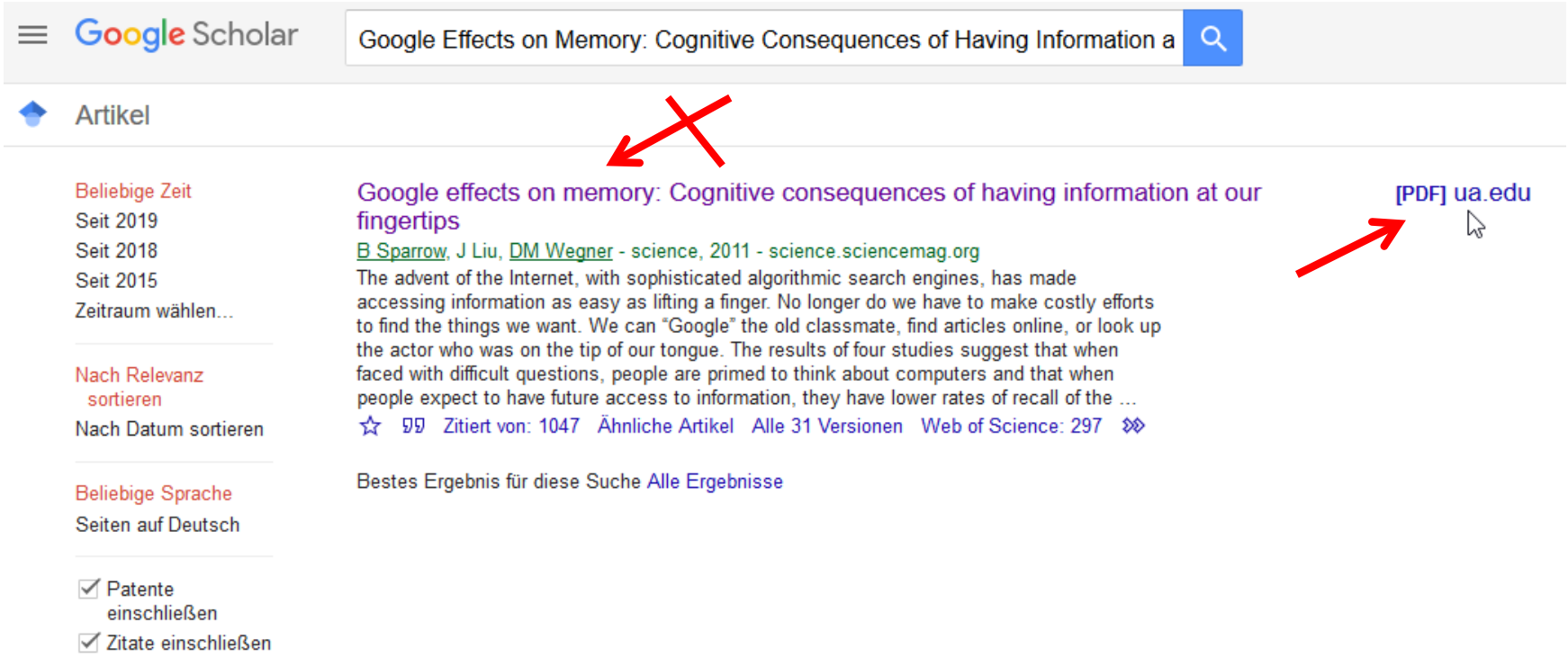
Via Google

TUHH
Technische Universität Hamburg



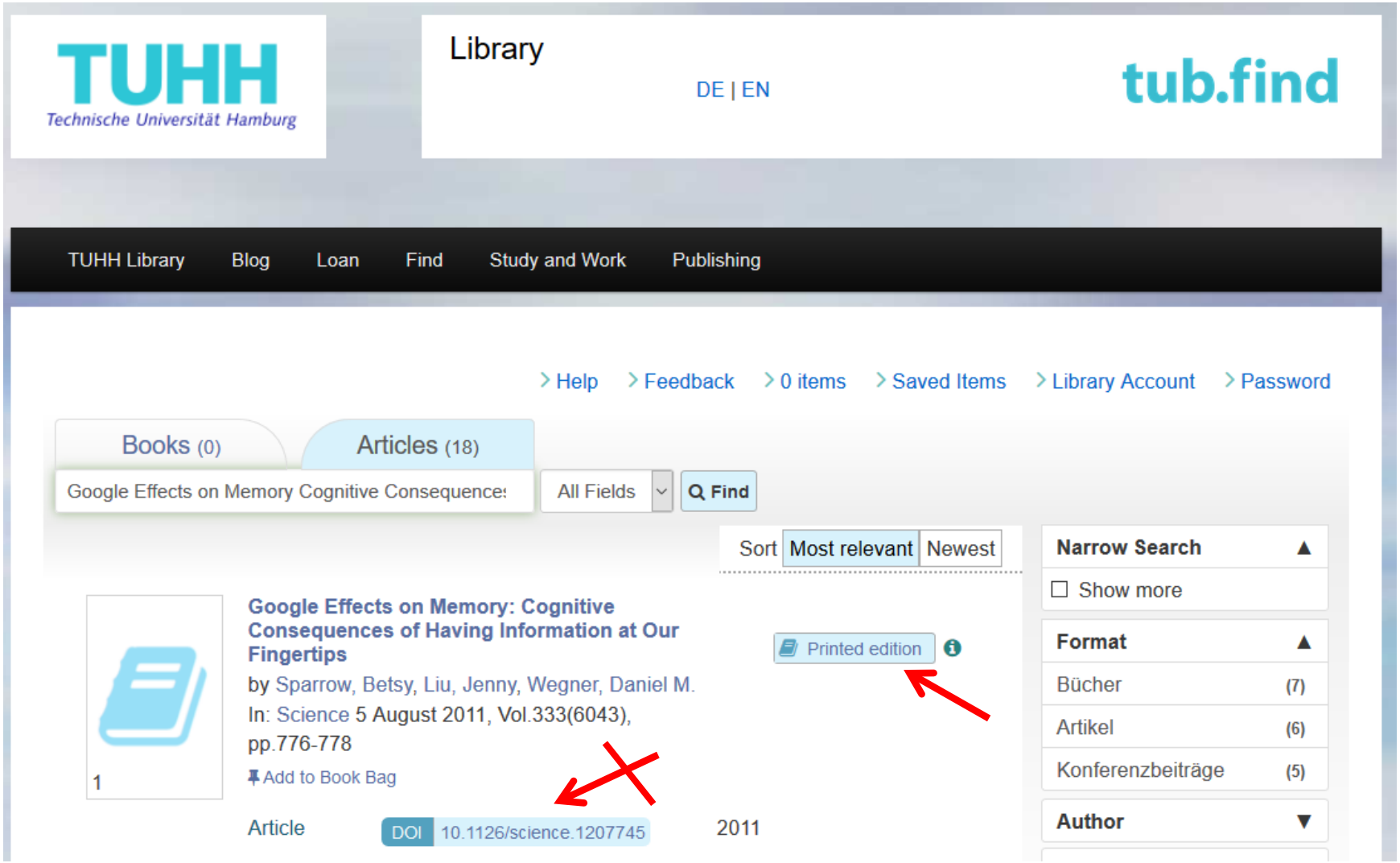
Via Google Scholar

TUHH
Technische Universität Hamburg



Via tub.find as printed article

TUHH
Technische Universität Hamburg



How to get the full text of this article?

TUHH
Technische Universität Hamburg

R. Ladenstein, G. Antranikian: Proteins from hyperthermophiles: Stability and enzymatic catalysis close to the boiling point of water. Biotechnology of Extremophiles. 1998, pp. 37 - 85.

Access: Printed in a book located in the TUHH reading rooms

How to find?

How to get the full text of this article?

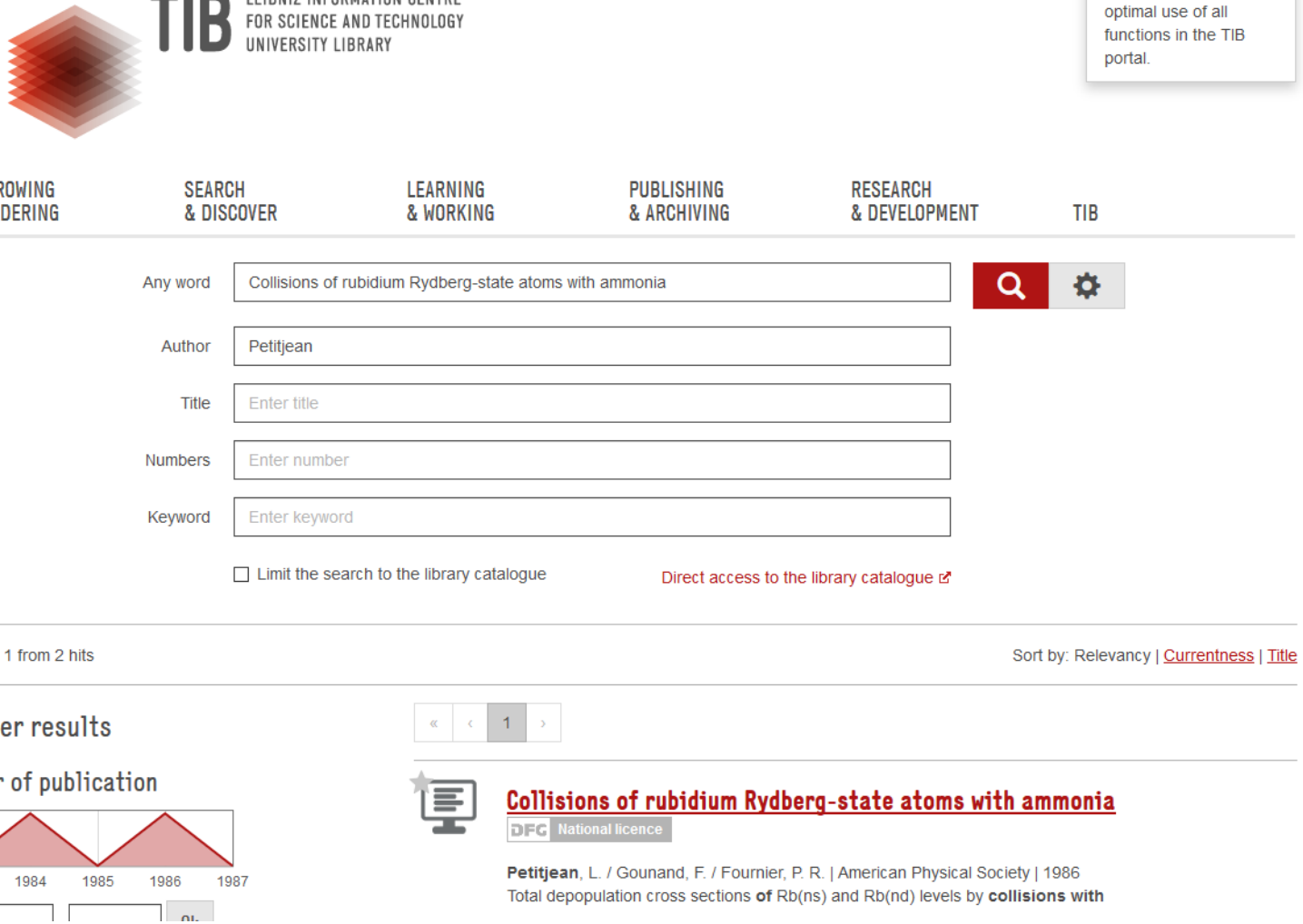
TUHH
Technische Universität Hamburg

Collisions of rubidium Rydberg-state atoms with ammonia. L Petitjean, F Gounand, PR Fournier. Physical Review A, 1986. Volume: 33 Issue: 1 Pages: 143-147

Access not possible via publisher‘s website within TUHH intranet.
Catalog links to fulltext via GetInfo at TIB Hannover!

Full text via TIB Hannover

TUHH
Technische Universität Hamburg



How to get the full text of this article?

TUHH
Technische Universität Hamburg

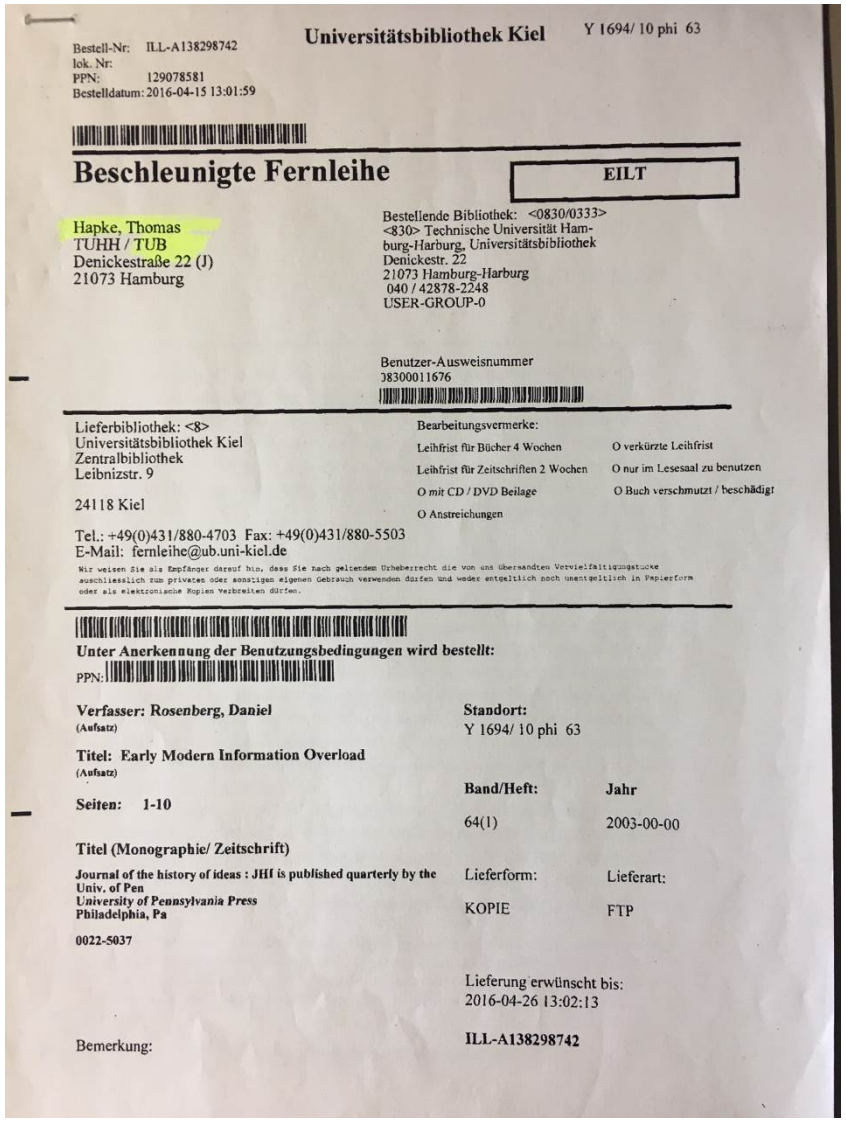
Early Modern Information Overload, Daniel Rosenberg, Journal of the History of Ideas 64 (2003) 1, pp. 1-9 10.1353/jhi.2003.0017

Access: Full text from TUHH only available via interlibrary loan!

How to do interlibrary loan?
What does the character string at the end of the citation mean?

Article in print via interlibrary loan

TUHH
Technische Universität Hamburg



Universitätsbibliothek Kiel Y 1694/ 10 phi 63

Bestell-Nr: ILL-A138298742
lok. Nr:
PPN: 129078581
Bestelldatum: 2016-04-15 13:01:59

Beschleunigte Fernleihe EILT

Hapke, Thomas
TUHH / TUB
Denickestraße 22 (J)
21073 Hamburg

Bestellende Bibliothek: <0830/0333>
<830> Technische Universität Hamburg-Harburg, Universitätsbibliothek
Denickestr. 22
21073 Hamburg-Harburg
040 / 42878-2248
USER-GROUP-0

Benutzer-Ausweisnummer
08300011676

Lieferbibliothek: <8>
Universitätsbibliothek Kiel
Zentralbibliothek
Leibnizstr. 9

24118 Kiel

Tel.: +49(0)431/880-4703 Fax: +49(0)431/880-5503
E-Mail: fernleihe@ub.uni-kiel.de

Bearbeitungsvermerke:
Leihfrist für Bücher 4 Wochen
Leihfrist für Zeitschriften 2 Wochen
O mit CD / DVD Beilage
O Anstreichungen
O verkürzte Leihfrist
O nur im Lesesaal zu benutzen
O Buch verschmutzt / beschädigt

Wir weisen Sie als Empfänger darauf hin, dass Sie nach geltendem Urheberrecht die von uns übersandten Vervielfältigungsstücke ausschliesslich zum privaten oder sonstigen eigenen Gebrauch verwenden dürfen und weder entgeltlich noch unentgeltlich in Papierform oder als elektronische Kopien verbreiten dürfen.

Unter Anerkennung der Benutzungsbedingungen wird bestellt:
PPN:

Verfasser: Rosenberg, Daniel
(Aufsatz)

Titel: Early Modern Information Overload
(Aufsatz)

Seiten: 1-10

Titel (Monographie/ Zeitschrift)

Journal of the history of ideas : JHI is published quarterly by the Univ. of Pen
University of Pennsylvania Press
Philadelphia, Pa

0022-5037

Standort:
Y 1694/ 10 phi 63

Band/Heft: 64(1)
Jahr 2003-00-00

Lieferform: KOPIE
Lieferart: FTP

Lieferung erwünscht bis:
2016-04-26 13:02:13

ILL-A138298742

Bemerkung:

„On the shoulders of“ Google Scholar

TUHH
Technische Universität Hamburg

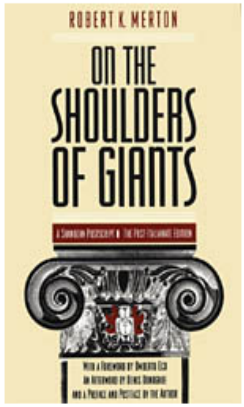
Google Scholar

Articles (include patents) Case law

Stand on the shoulders of giants

On the Shoulders of Giants

THE POST-ITALIANATE EDITION

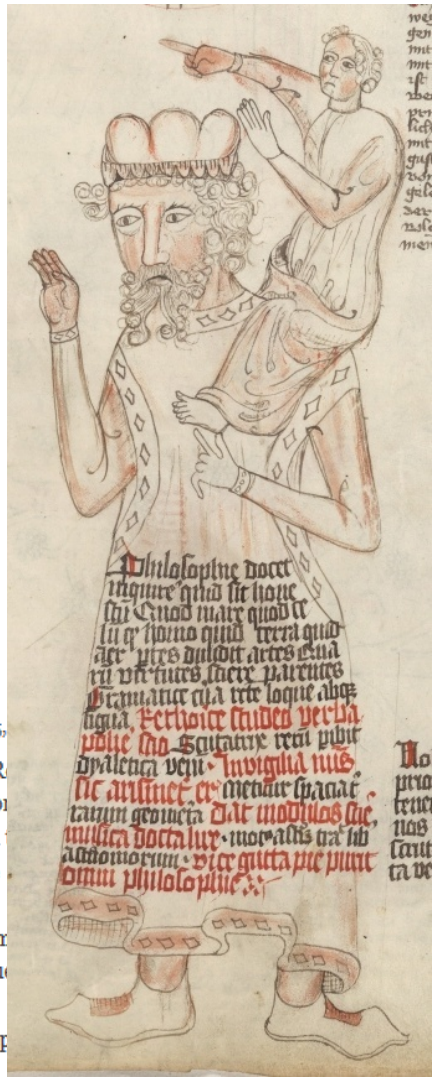


SHARE

ROBERT K. MERTON

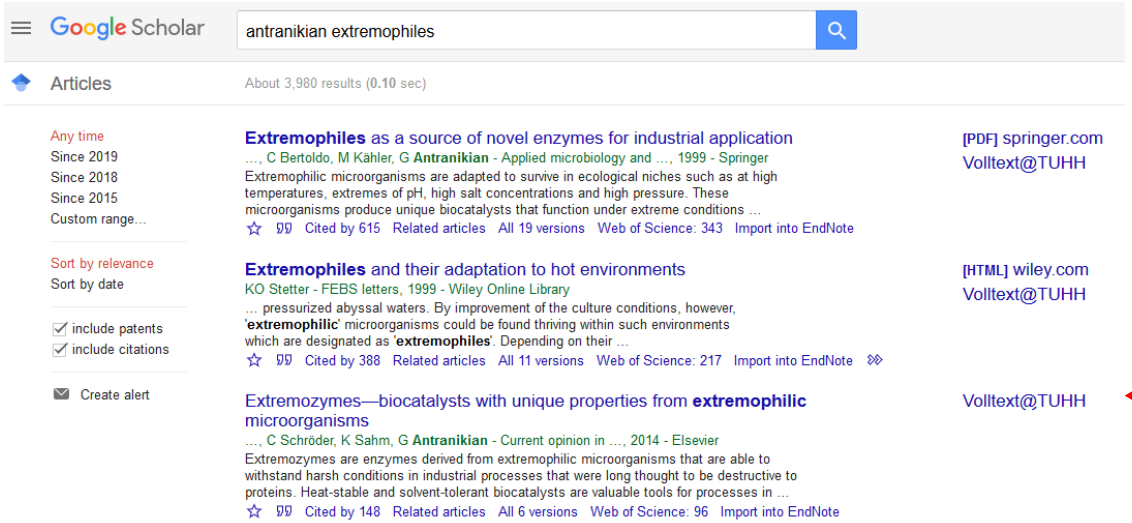
348 pages | 4 halftones | 5-1/2 x 8-1/2 | © 1965, 1985,

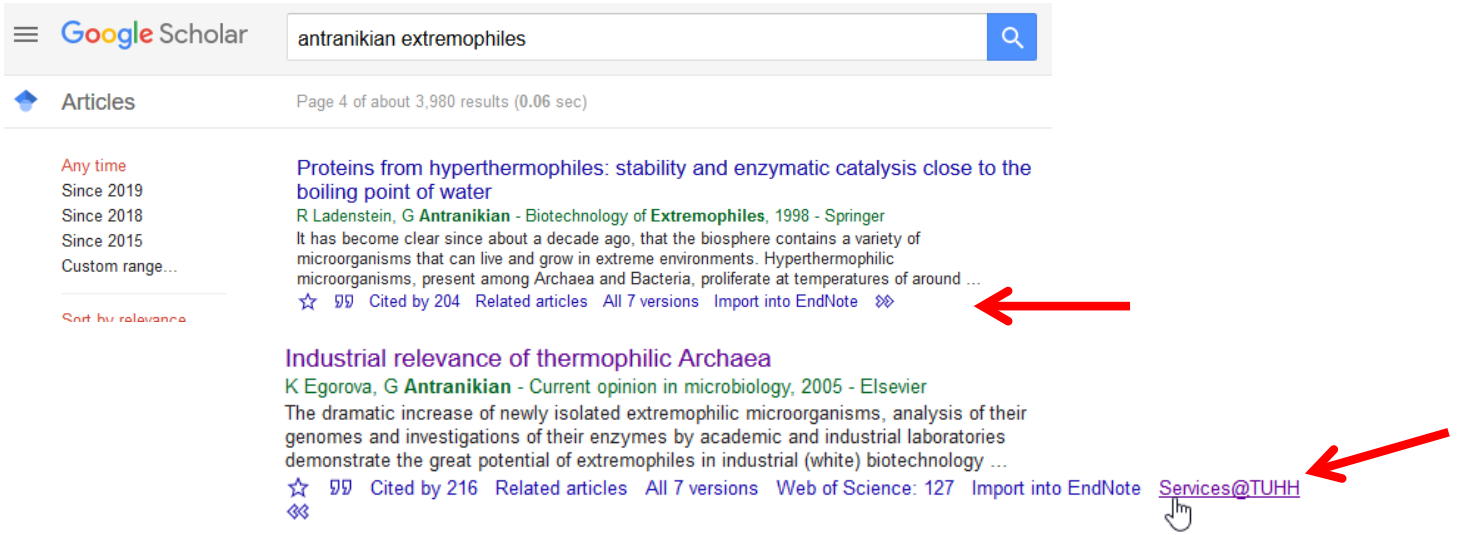
With playfulness and a large dose of wit, R
Merton traces the origin of Newton's apho
"If I have seen farther, it is by standing on
shoulders of giants." Using as a model the
discursive and digressive style of Sterne's
Tristram Shandy, Merton presents a whim
yet scholarly work which deals with the qu
of creativity, tradition, plagiarism, the
transmission of knowledge, and the concep
progress.



Finding full texts

TUHH
Technische Universität Hamburg

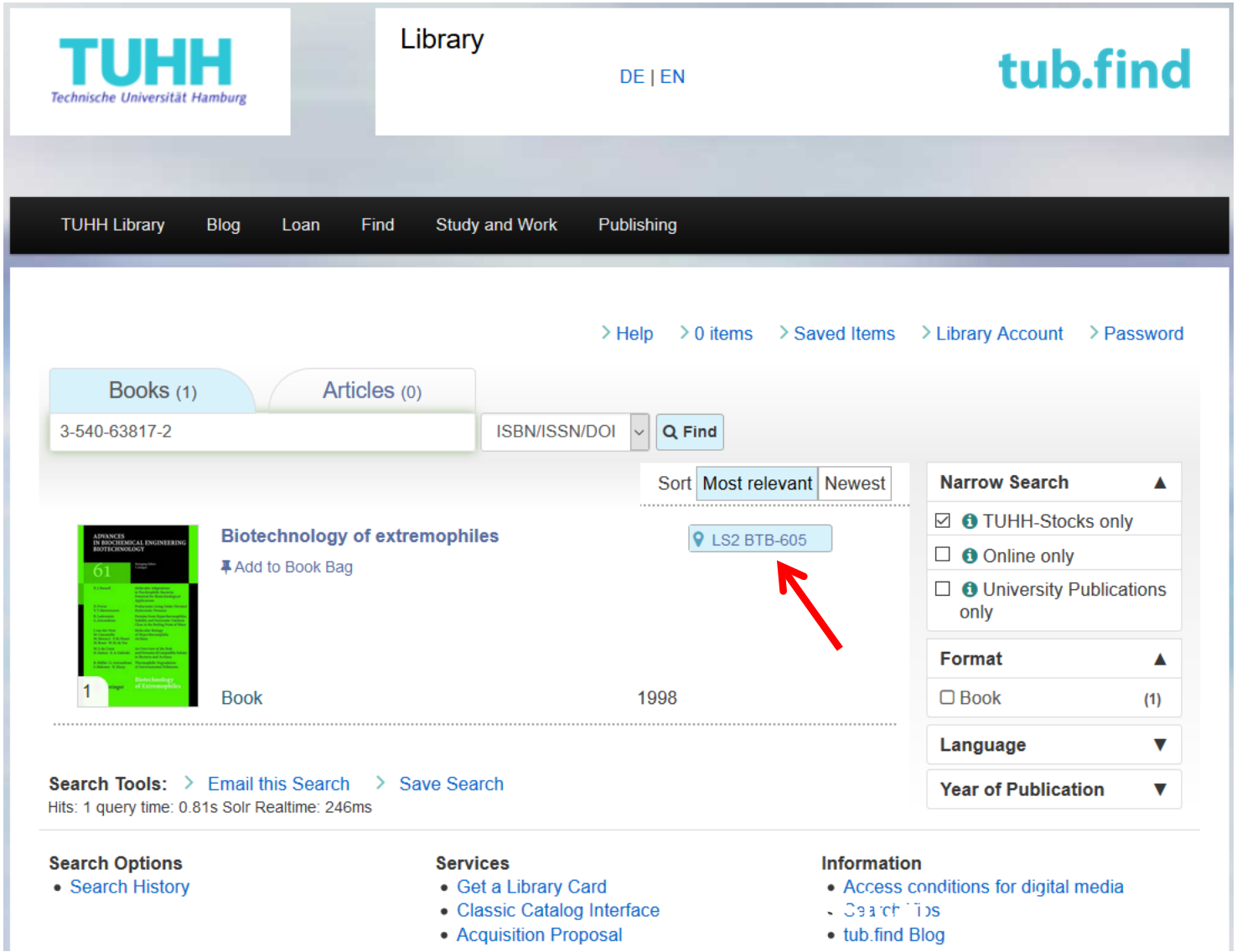




Google Scholar https://scholar.google.com

From Google Scholar to the printed book!

TUHH
Technische Universität Hamburg



A further example

TUHH
Technische Universität Hamburg

[HTML] Biotechnological applications of **extremophiles**, extremozymes and extremolytes

[HTML] springer.com
Volltext@TUHH

N Raddadi, A Cherif, D Daffonchio, M Neifar... - Applied microbiology and ..., 2015 - Springer

... is motivated by important results obtained in the field of **extremophile** research, the ... gene-directed evolution, and gene/genome shuffling (Egorova and **Antranikian**, 2005; Ferrer et ... in metagenomes as overcoming bottlenecks related to the uncultivability of **extremophiles** in some ...

☆ 99 Cited by 44 Related articles All 13 versions Web of Science: 32 Import into EndNote

New opportunities revealed by biotechnological explorations of **extremophiles**

[PDF] semanticscholar.org
Volltext@TUHH

M Podar, AL Reysenbach - Current opinion in biotechnology, 2006 - Elsevier

... Most applications involving **extremophiles** are based on their biomolecules, primarily enzymes but also other ... The most well-known example of a successful application of an **extremophile**-derived product is ... Numerous other examples are reviewed in the article by **Antranikian** [5 ...

☆ 99 Cited by 118 Related articles All 10 versions Web of Science: 64 Import into EndNote

Industrial relevance of thermophilic Archaea

K Egorova, G **Antranikian** - Current opinion in microbiology, 2005 - Elsevier

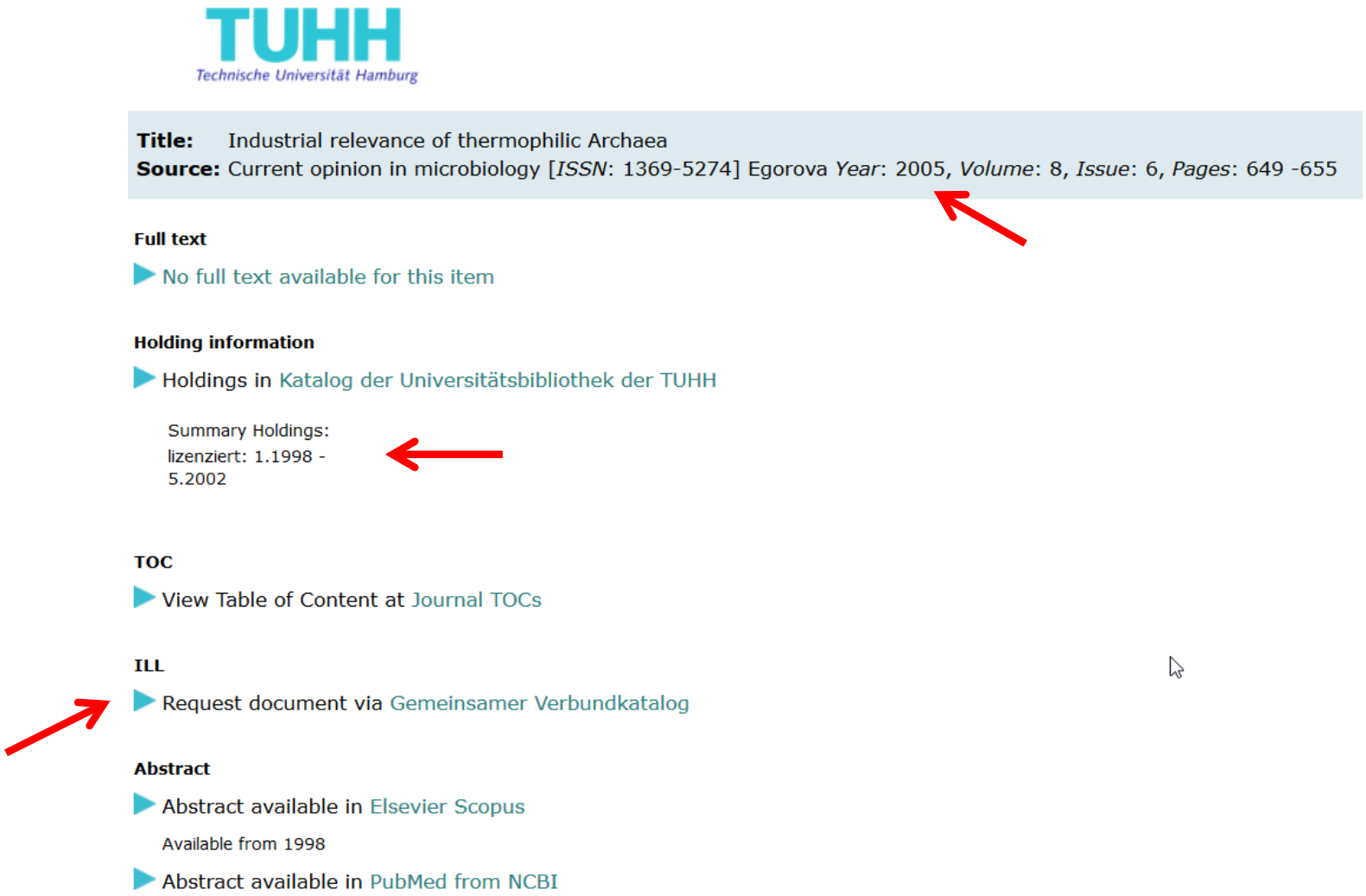
The dramatic increase of newly isolated extremophilic microorganisms, analysis of their genomes and investigations of their enzymes by academic and industrial laboratories demonstrate the great potential of extremophiles in industrial (white) biotechnology ...

☆ 99 Cited by 216 Related articles All 7 versions Web of Science: 127 Import into EndNote Services@TUHH

Google Scholar https://scholar.google.com

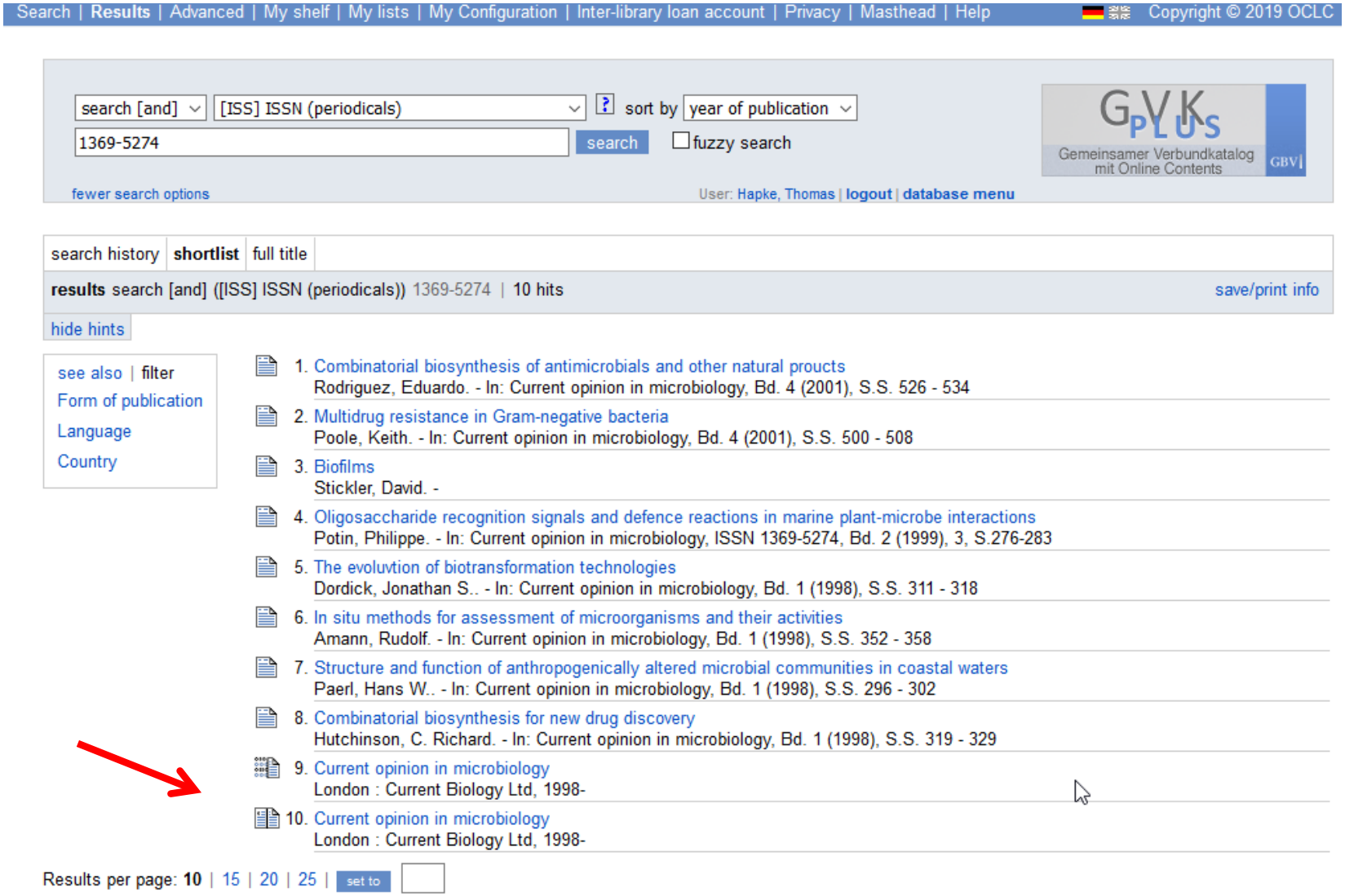
Request for interlibrary loan!

TUHH
Technische Universität Hamburg



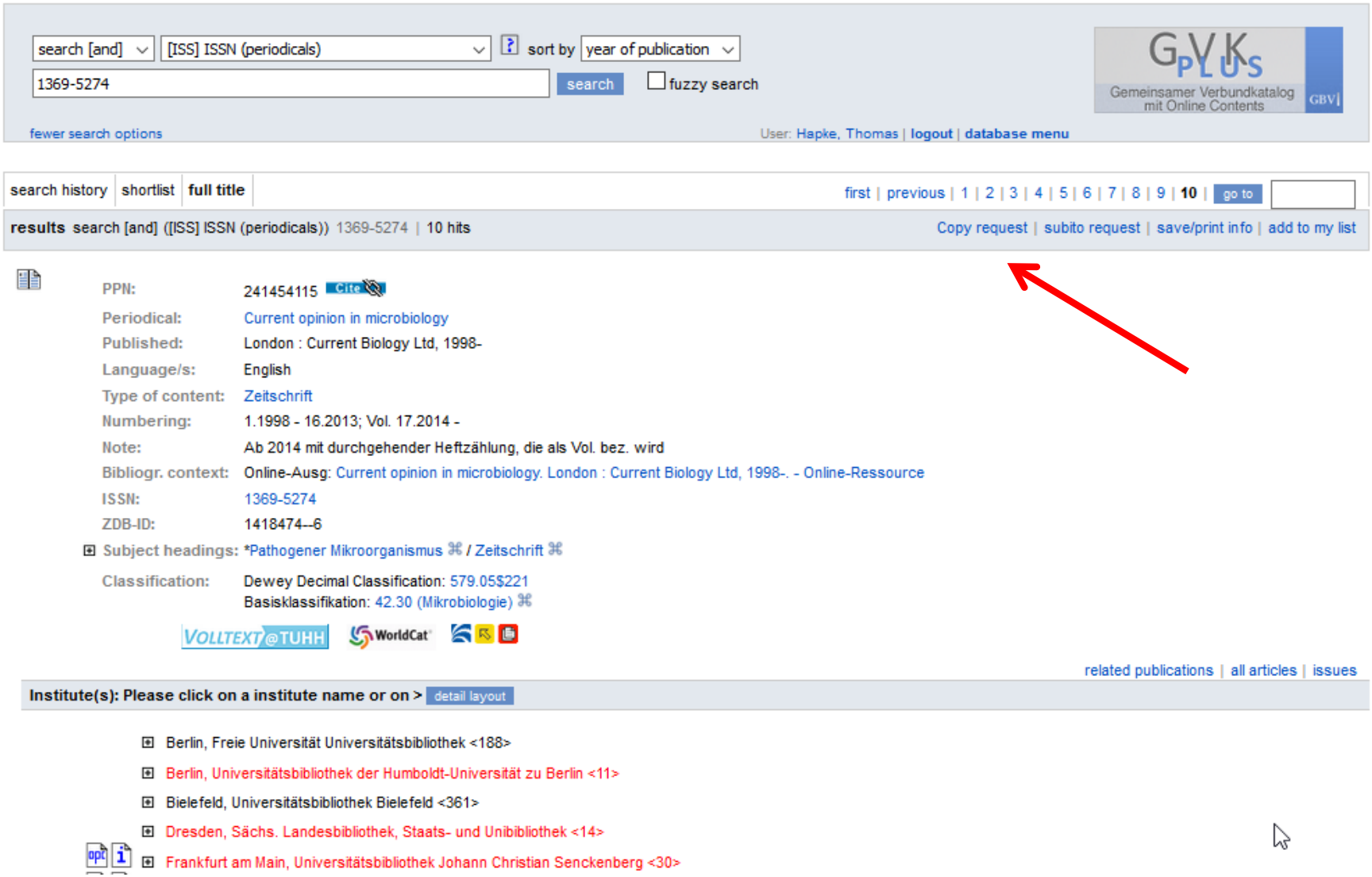
Ordering interlibrary loan via GBV database

TUHH
Technische Universität Hamburg



Request for copy!

TUHH
Technische Universität Hamburg



Interlibrary loan via library union network

TUHH
Technische Universität Hamburg

GBV

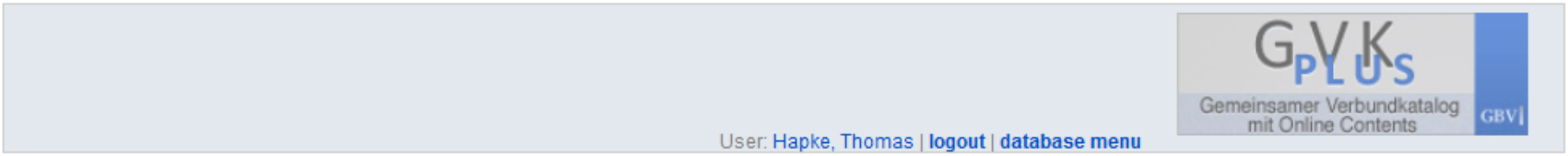
Interlibrary loan for material not owned by the TUHH library!

Use the databases of the **GBV Common Library Network** to locate material!

Fee 1,50 € for one article (copy) or book.

Request details already filled!

TUHH
Technische Universität Hamburg



Copy request: 08300011676

ILL request can be submitted

periodical: Current opinion in microbiology
year(-month-day): 1998
place: London
publisher: Current Biology Ltd

delivery options

author: Egorova
article: Industrial relevance of thermophilic Archaea

year: 2005 volume: 8 edition: 6 pages: 649-655

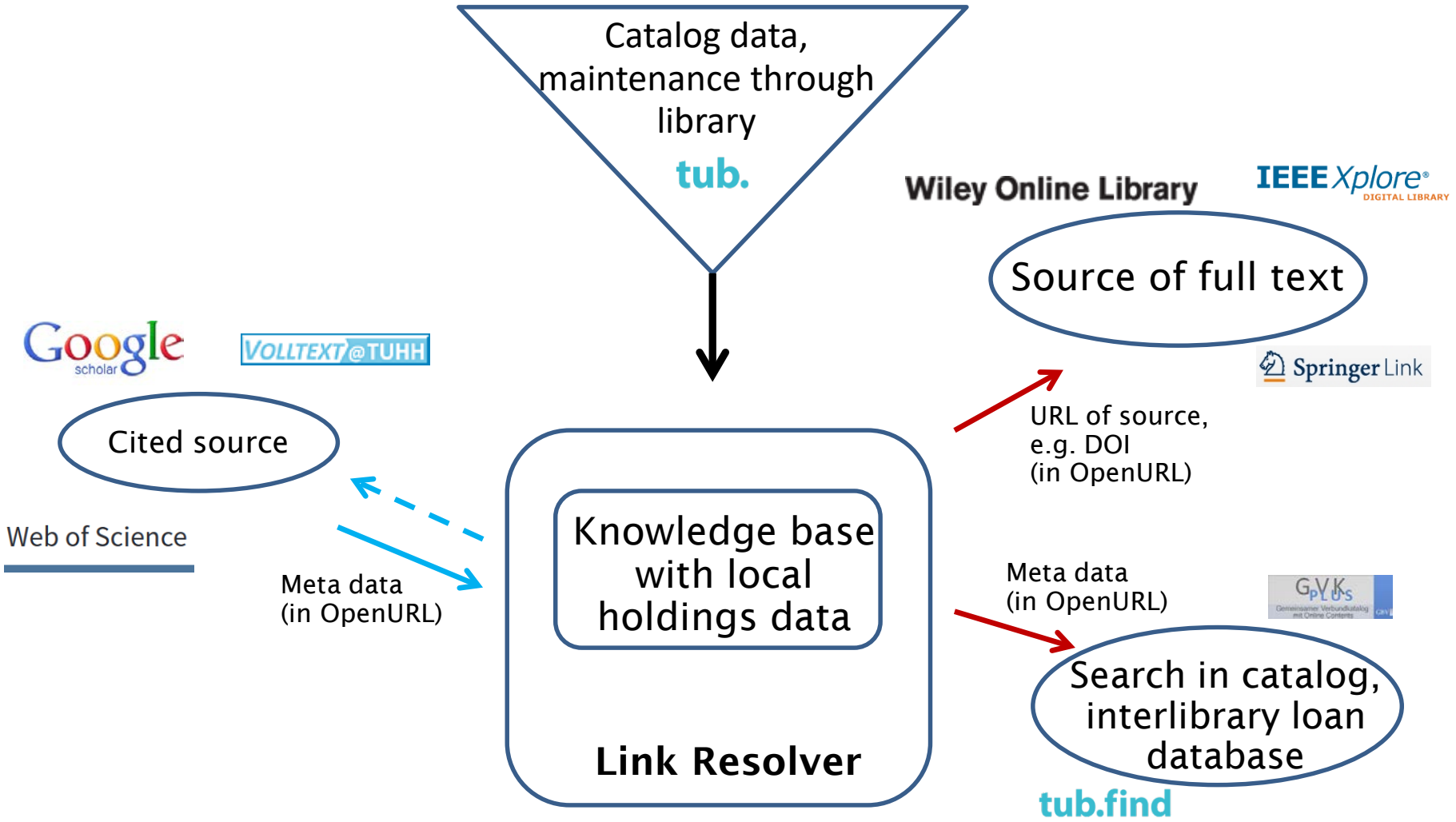
remark:
local requestno.:

User data

name: Hapke, Thomas *
TUHH / TUB
address: Denickestraße 22 (J) *
zip code: 21073 *

Function of Link Resolvers

TUHH
Technische Universität Hamburg



Informing – Points to survive

TUHH
Technische Universität Hamburg

1. Orientation before searching.
2. Don‘t trust only one information source.
3. In case you are asked for your login or for your credit card, remember the library …
4. When searching: „Bulls*** in, bulls*** out.“

Think about search terms you use and their variations and synonyms.

Poorly chosen search terms bring poor search results. Too general key words lead to too many hits from which often only a fraction is useful; when using too specific key words, important information might not be found.

Play! With search terms!

TUHH
Technische Universität Hamburg

Make a search term diagram!

Topic: Microbial degradation of aromatic compounds in soil

Component 1	**Component 2**	**Component 3**
Microbi* degrad*	aromat*	soil*
Biodegrad*	Polyaromat*	Clay*
Bioremed*	Benzene	compost*
Microbi* decompos*	PAH	sediment*
Mikrobiol* abbau*	Naphthalin	Boden*
		Böden

Component 1 **AND** Component 2 **AND** Component 3
where e.g.
Component 1 = (“microbi* degrad*”) **OR** biodegrad* **OR** bioremed* **OR** ...

Play! With search terms!

TUHH
Technische Universität Hamburg

Make a search term diagram:

Topic: Recycling of plastics by biotechnological methods

Component 1	**Component 2**	**Component 3**
Recycl*	Plasti*	biotech*
reuse	polymer*	Biodegrad*
Wiederverw*	Kunststoff*	Microbi*
Verwert*	PVC	

Component 1 **AND** Component 2 **AND** Component 3
where e.g.
Component 2 = plasti* **OR** polymer* **OR** kunststoff* **OR** ...

Playing with search terms in Web of Science

TUHH
Technische Universität Hamburg

Web of Science

Clarivate Analytics

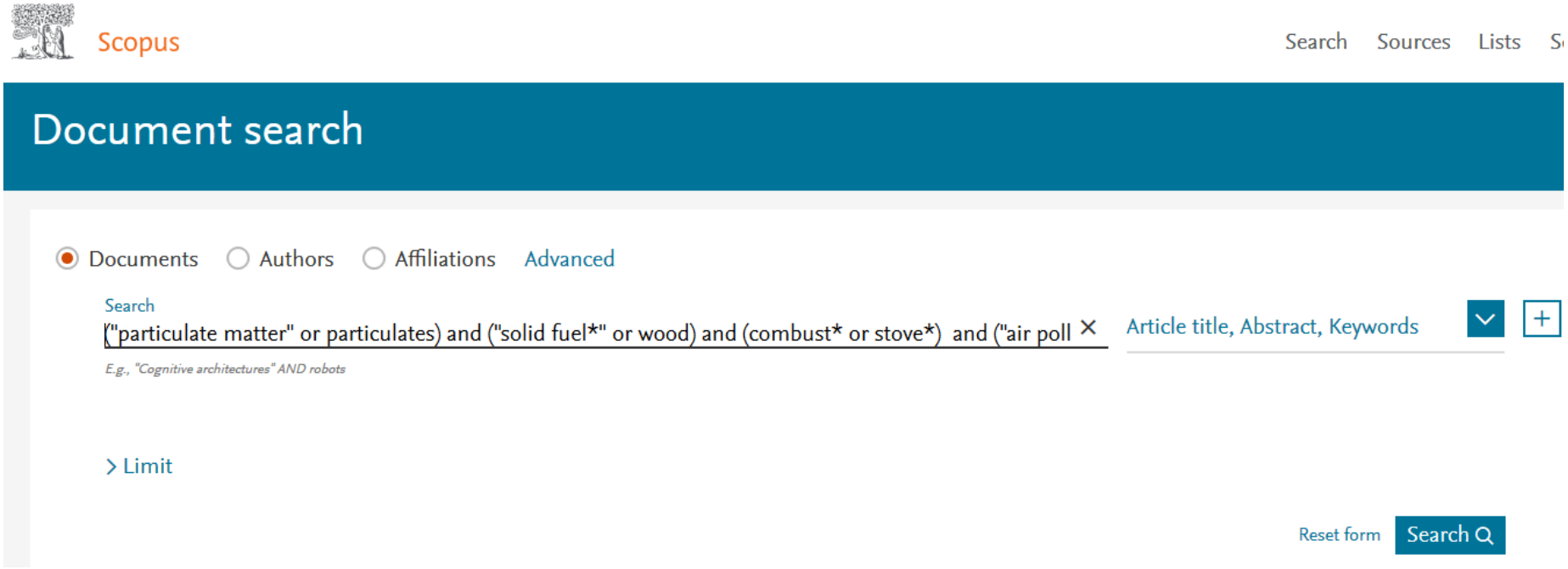
Search | Tools | Searches and alerts | Search History | Marked List

Search History Web of Science Core Collection

Set	Results	Save History / Create Alert / Open Saved History	Edit Sets	Combine Sets (AND / OR) Combine	Delete Sets Select All / Delete
#6	5	**TOPIC:** ((biodegrad* or "microbial degrad*" or bioremed* or "biological degrad*") and (aromat* or polyaromat*) and (soil* or clay*) and extremophil*) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years*	Edit	☐	☐
#5	1,239	**TOPIC:** ((biodegrad* or "microbial degrad*" or bioremed* or "biological degrad*") and (aromat* or polyaromat*) and (soil* or clay*) and (petroleum or "oil spill*")) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years*	Edit	☐	☐
#4	5,680	**TOPIC:** ((biodegrad* or "microbial degrad*" or bioremed* or "biological degrad*") and (aromat* or polyaromat*) and (soil* or clay*)) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years*	Edit	☐	☐
#3	1,551	**TOPIC:** (biodegradation of aromatic compounds in soils) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years*	Edit	☐	☐
#2	207	**TOPIC:** (biological degradation of aromatic compounds in soils) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years*	Edit	☐	☐
#1	842	**TOPIC:** (microbial degradation of aromatic compounds in soils) *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan=All years*	Edit	☐	☐

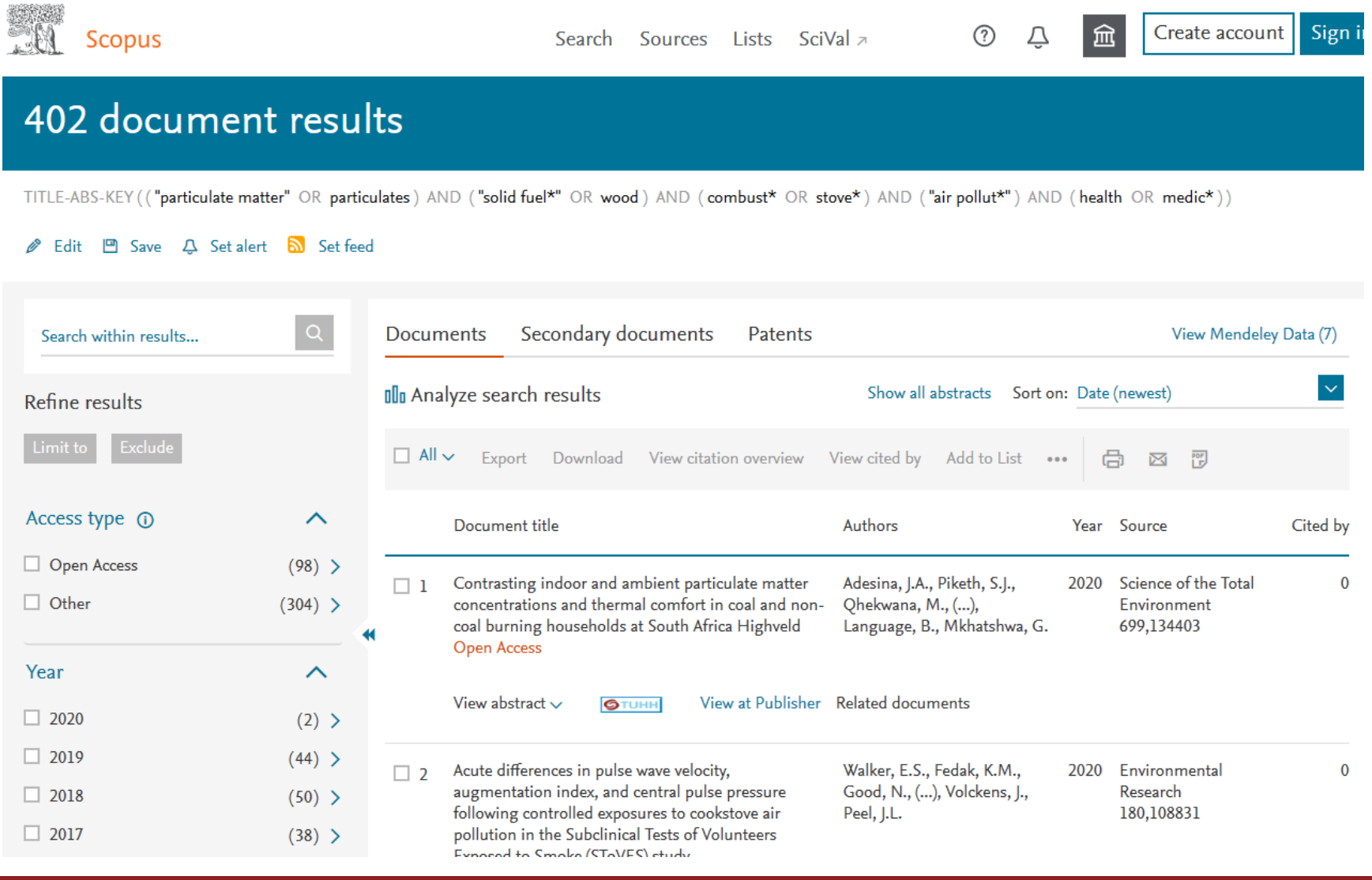
Playing with search terms in Scopus

TUHH
Technische Universität Hamburg



Results page in Scopus

TUHH
Technische Universität Hamburg

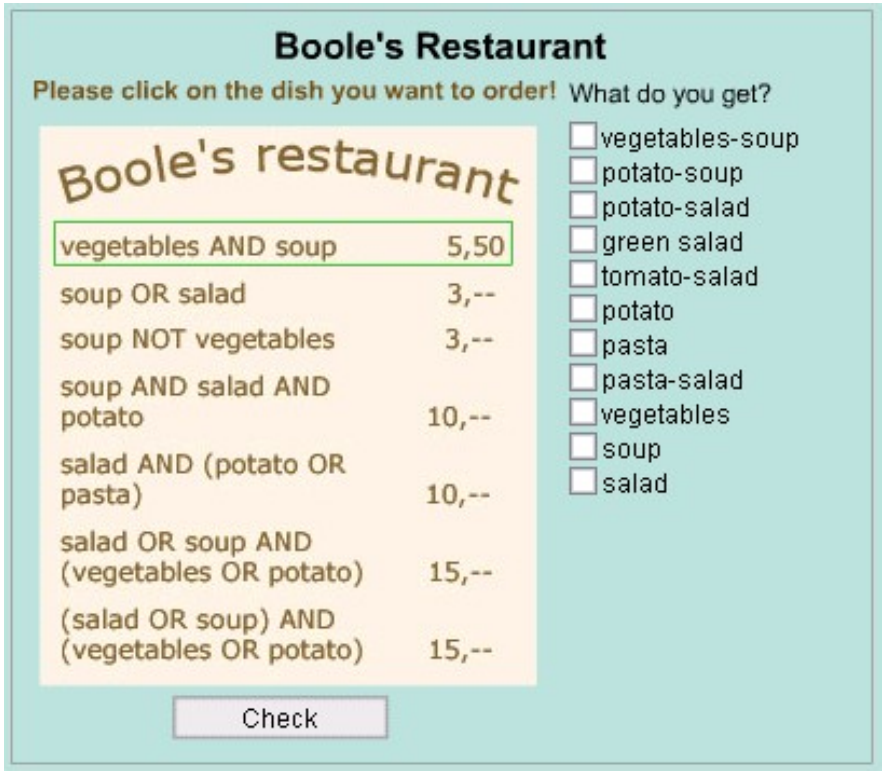


Play! With databases!

TUHH
Technische Universität Hamburg

Explore database features:

- Boolean logic
- Wildcard symbols: * ? $
- “Neighborhood operators”:
  Context and phrases
- Search fields:
  Basic index, author field,
  descriptor or thesaurus fields



Informing – Points to survive

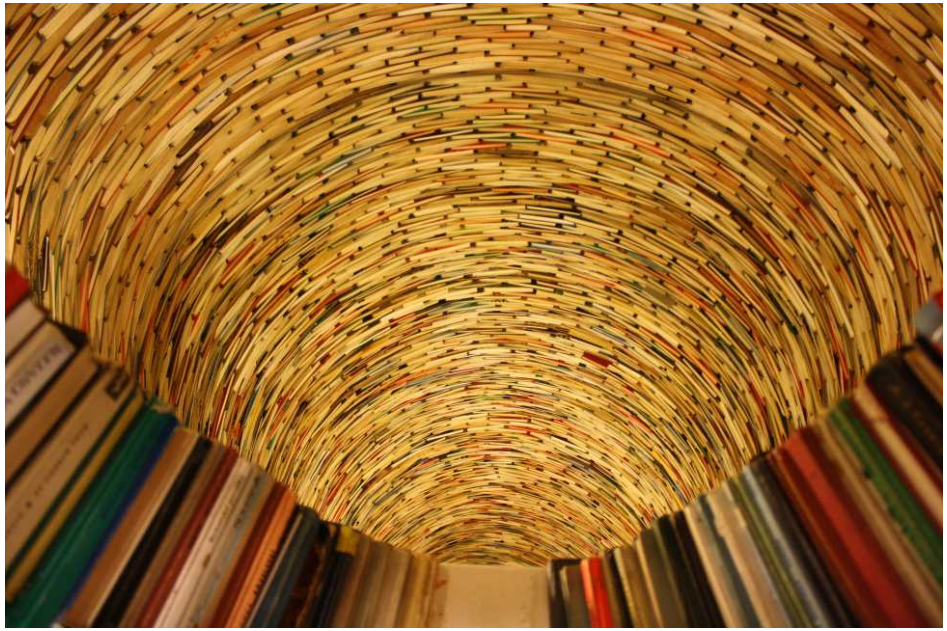
TUHH
Technische Universität Hamburg

1. Orientation before searching.
2. Don‘t trust only one information source.
3. In case you are asked for your login or for your credit card, remember the library …
4. When searching: „Bulls*** in, bulls*** out.“
5. **When finding information - think already of its further processing, respectively later publication of your research results.**

How to cope with information overload?

Reference management is no art!

TUHH
Technische Universität Hamburg

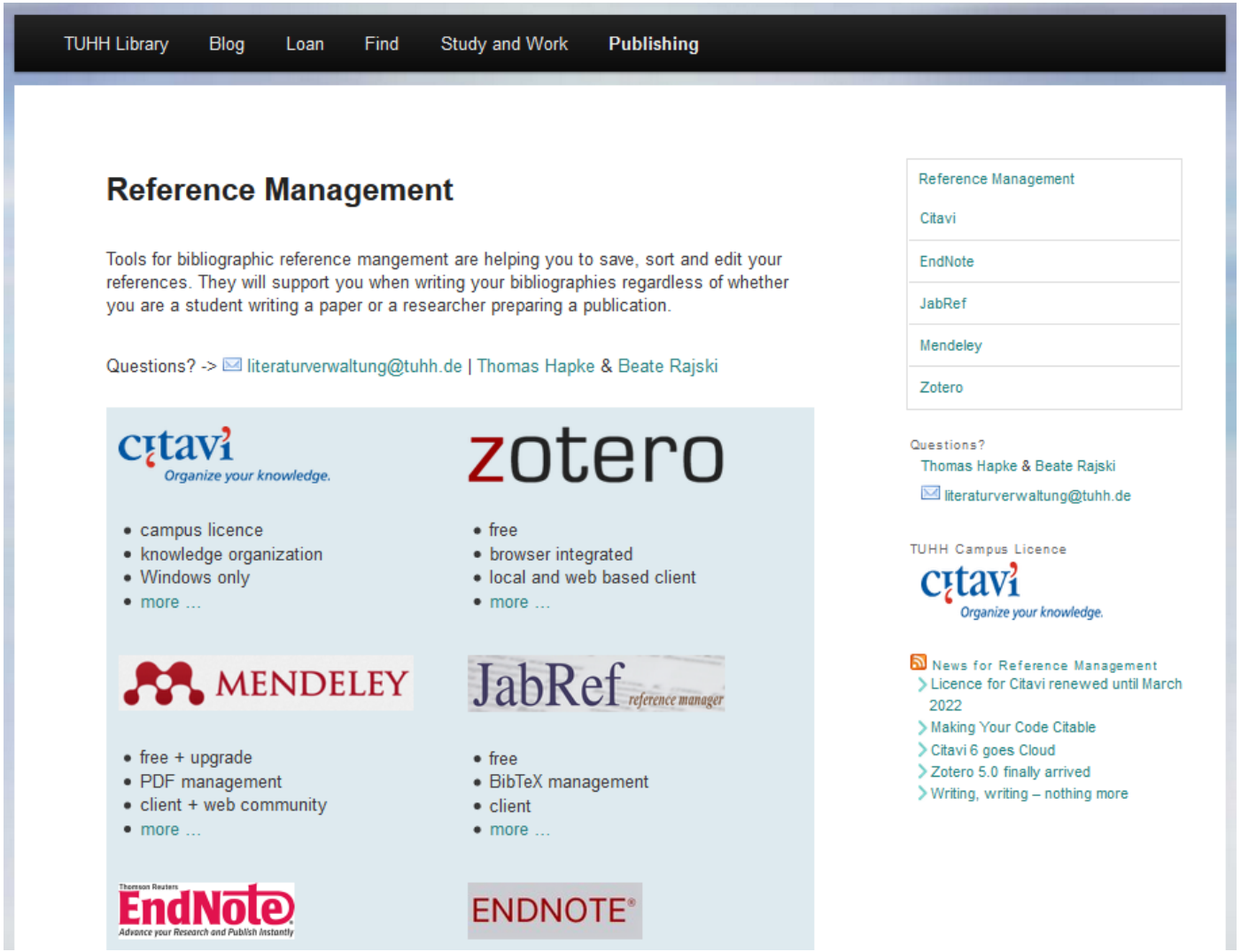


Matej Krén, Idiom, Town Library Prague (1998),
Photo 2009

Today not searching or finding is the main problem, but coping with information overload!

Software for reference management

TUHH
Technische Universität Hamburg



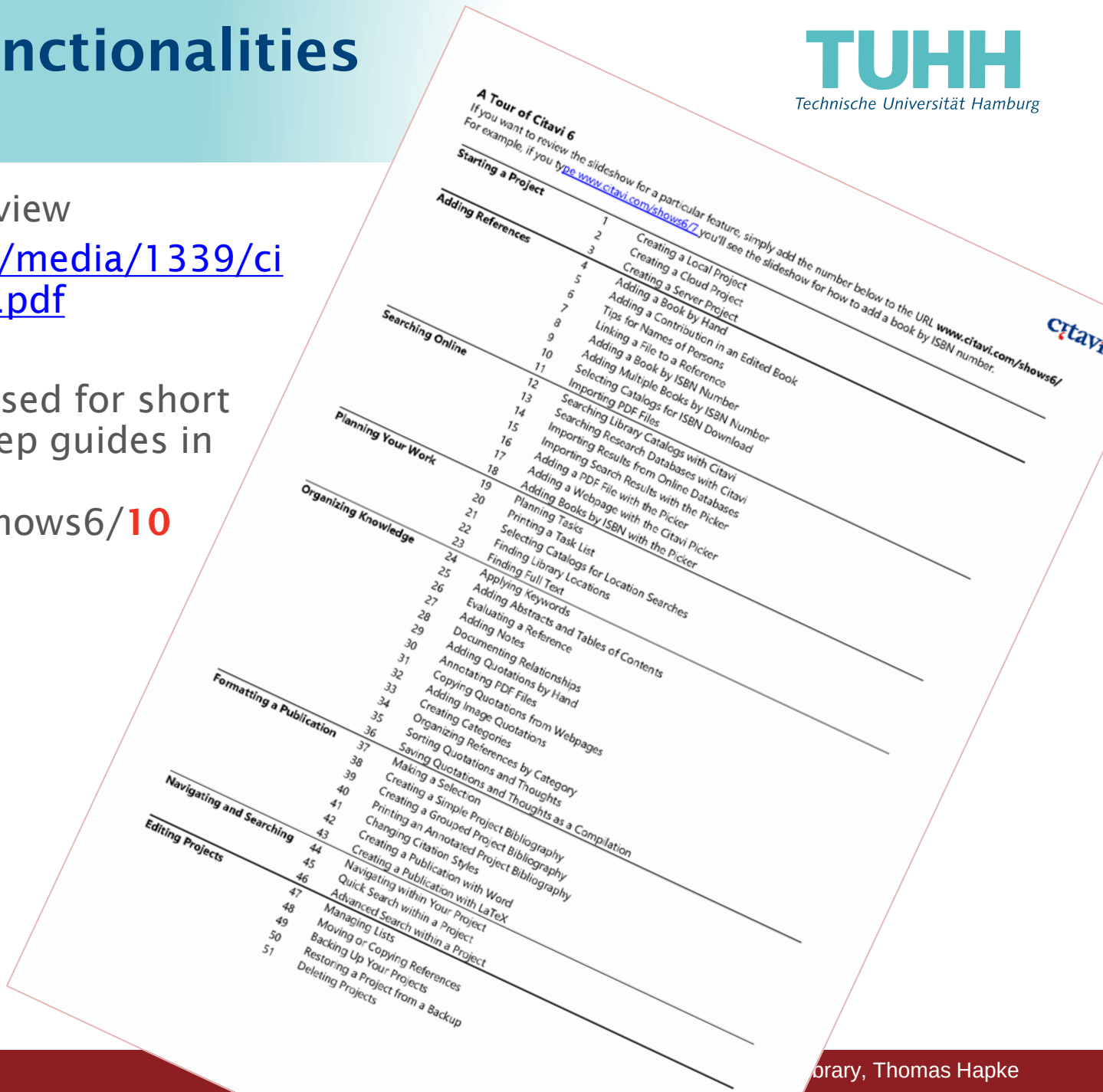
https://www.tub.tuhh.de/en/publishing/reference-management/

Possible functionalities in Citavi

TUHH
Technische Universität Hamburg

Step-by-Step Overview
https://citavi.com/media/1339/citavi_6_slideshows.pdf

Numbers can be used for short links to step-by-step guides in the manual, e.g. www.citavi.com/shows6/**10**



A Tour of Citavi 6

If you want to review the slideshow for a particular feature, simply add the number below to the URL **www.citavi.com/shows6/**
For example, if you type www.citavi.com/shows6/7 you'll see the slideshow for how to add a book by ISBN number.

Starting a Project
1 Creating a Local Project
2 Creating a Cloud Project
3 Creating a Server Project

Adding References
4 Adding a Book by Hand
5 Adding a Contribution in an Edited Book
6 Tips for Names of Persons
7 Linking a File to a Reference
8 Adding a Book by ISBN Number
9 Adding Multiple Books by ISBN Number
10 Selecting Catalogs for ISBN Download
11 Importing PDF Files

Searching Online
12 Searching Library Catalogs with Citavi
13 Searching Research Databases with Citavi
14 Importing Results from Online Databases
15 Importing Search Results with the Picker
16 Adding a PDF File with the Picker
17 Adding a Webpage with the Citavi Picker
18 Adding Books by ISBN with the Picker

Planning Your Work
19 Planning Tasks
20 Printing a Task List
21 Selecting Catalogs for Location Searches

Organizing Knowledge
22 Finding Library Locations
23 Finding Full Text
24 Applying Keywords
25 Adding Abstracts and Tables of Contents
26 Evaluating a Reference
27 Adding Notes
28 Documenting Relationships
29 Adding Quotations by Hand
30 Annotating PDF Files
31 Copying Quotations from Webpages
32 Adding Image Quotations
33 Creating Categories
34 Organizing References by Category
35 Sorting Quotations and Thoughts
36 Saving Quotations and Thoughts as a Compilation

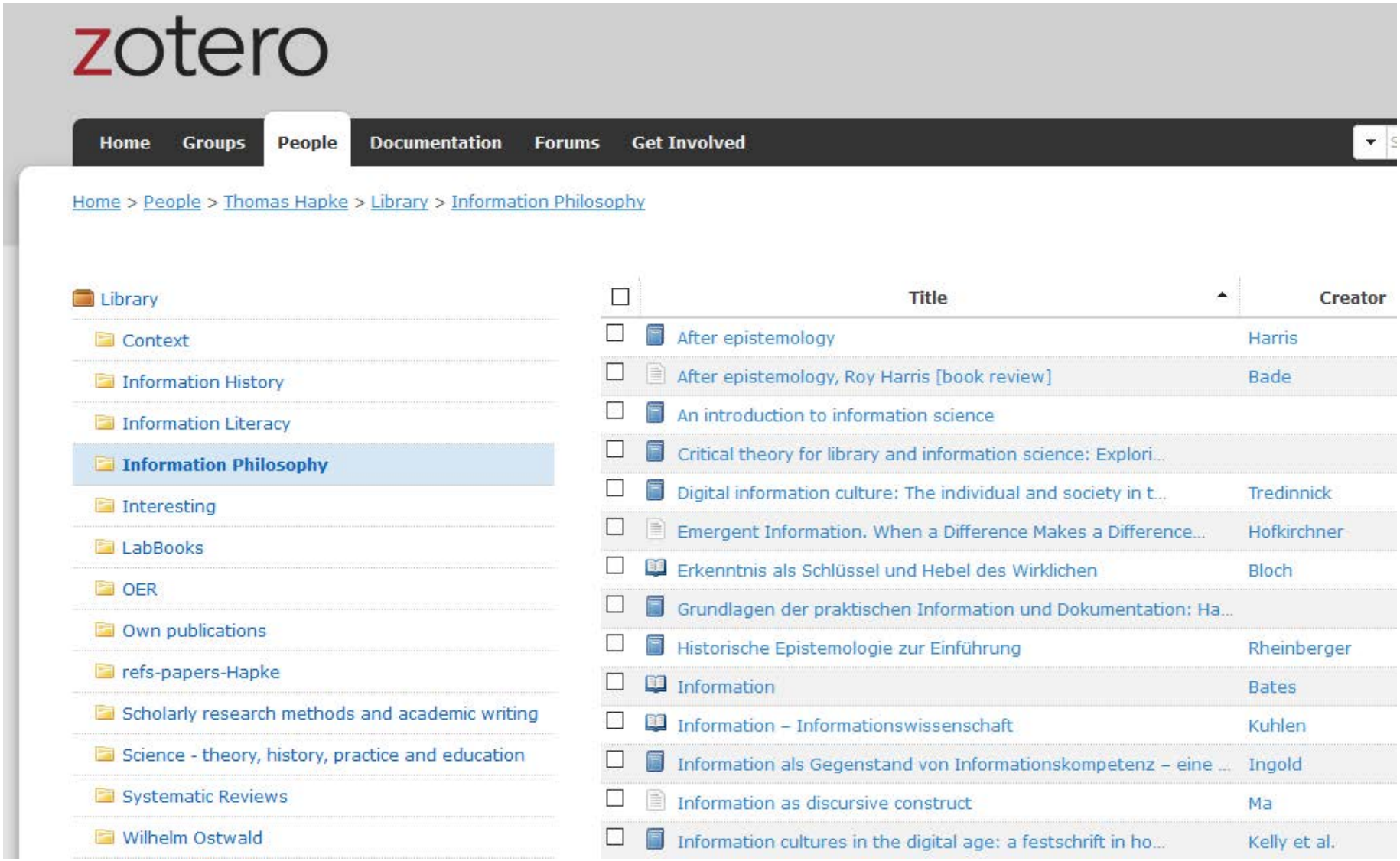
Formatting a Publication
37 Making a Selection
38 Creating a Simple Project Bibliography
39 Creating a Grouped Project Bibliography
40 Printing an Annotated Project Bibliography
41 Changing Citation Styles
42 Creating a Publication with Word
43 Creating a Publication with LaTeX

Navigating and Searching
44 Navigating within Your Project
45 Quick Search within a Project
46 Advanced Search within a Project

Editing Projects
47 Managing Lists
48 Moving or Copying References
49 Backing Up Your Projects
50 Restoring a Project from a Backup
51 Deleting Projects

Reference management on the web with Zotero

TUHH
Technische Universität Hamburg



Bibliographical formats to import

TUHH
Technische Universität Hamburg

RIS

```
TY  - JOUR
SN  - 0926-9630
AU  - Jauhiainen, A.
AU  - Pulkkinen, R.
T1  - Problem-based learning
JF  - Studies in health
SP  - 572
EP  - 576
VL  - 146
PY  - 2009
KW  - Education
KW  - Nursing
ER  -
```

EndNote Tagged

```
%0 Journal Article
%@ 0926-9630
%A Jauhiainen, A.
%A Pulkkinen, R.
%T Problem-based learning
%J Studies in health
%P 572-576
%V 146
%D 2009
%K Education
%K Nursing
```

BibTeX

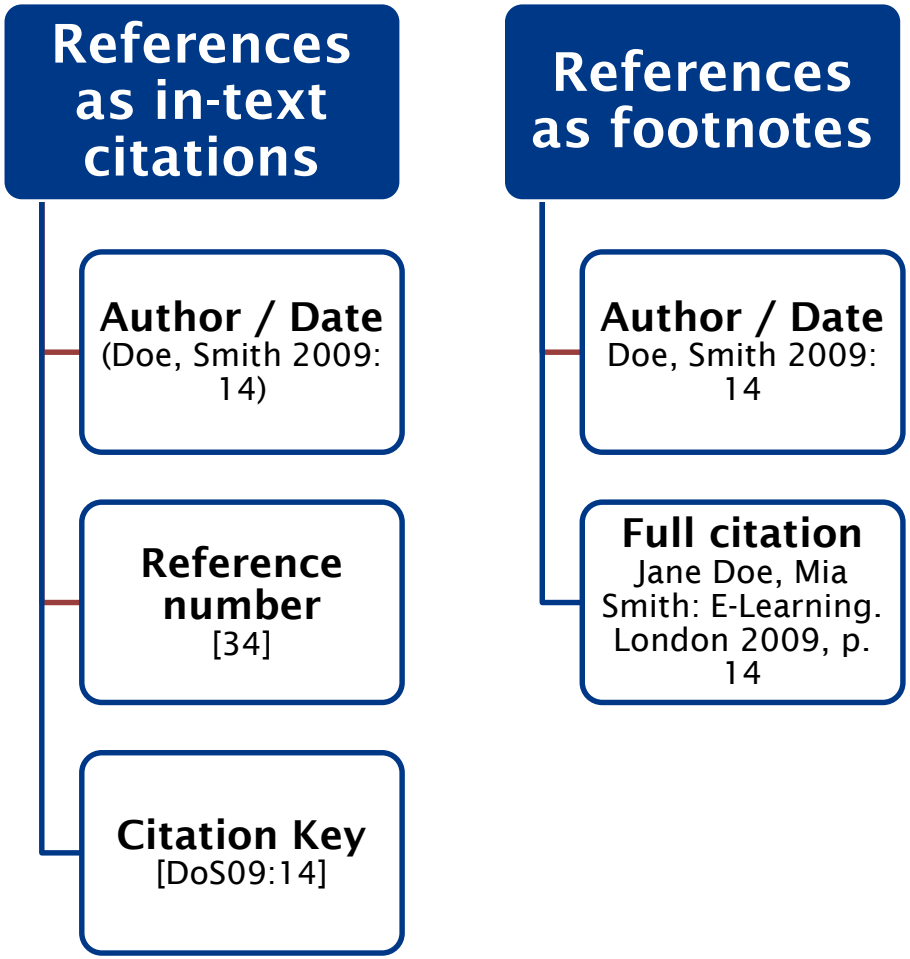
```
@article{Jauhiainen_Pulkkinen:
2009,
 author = {Jauhiainen, A. and
Pulkkinen, R.},
 year = {2009},
 title = {Problem-based
learning and e-learning
methods in clinical practice},
 keywords = {Education;
Nursing},
 pages = {572--576},
 volume = {146},
 issn = {0926-9630},
 journal = {Studies in health}
}
```

No Standard

```
PMID- 19592907
PT  - Journal Article
IS  - 0926-9630 (Print)
AU  - Jauhiainen A
AU  - Pulkkinen R
TI  - Problem-based learning
JT  - Studies in health
PG  - 572-6
VI  - 146
DP  - 2009
MH  - Education
MH  - Nursing
```

Types of Citation Styles

TUHH
Technische Universität Hamburg

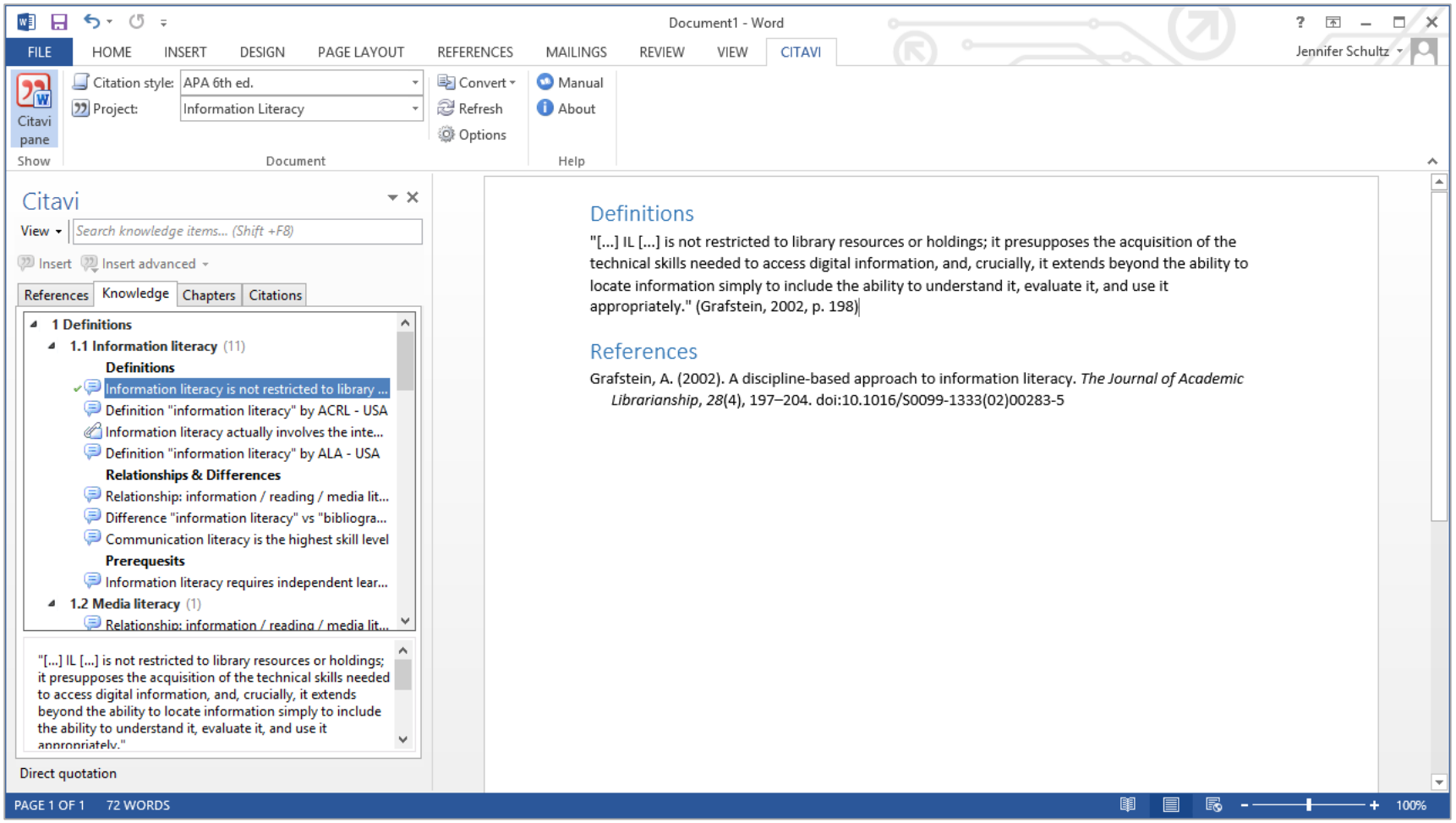


Author-Year-System also called „Harvard System“.
Known style = APA-Style.

Full citation in footnotes sometimes called „Oxford System“.
Known style = Chicago-Manual of Style

Combining Citavi or Zotero with Word or Writer

TUHH
Technische Universität Hamburg



A summary

TUHH
Technische Universität Hamburg

How to reduce uncertainty to miss important information?

- Using different databases.
- Using subject-specific databases.
- Reflecting on appropriate search terms.
- Knowing how to logically combine search terms within a specific database interface.
- Keeping treck of results through effective reference management.
- …

Basic rules for citing

TUHH
Technische Universität Hamburg

1) **Used sources have to be quoted.**

2) **Position of references has to be without any doubt.**

3) **Cited sources have to be traceable because of bibliographical description.**

4) **Consult the original document of your sources!**
   Don‘t use a citation from a paper without looking at the original document of the citation.
   Avoid secondary citations!

According:
Theuerkauf, Judith: Schreiben im Ingenieurstudium : Effektiv und effizient zur Bachelor-, Master- und Doktorarbeit. Paderborn : Schöningh, 2012, pp. 86-99.
Biedermann, Wieland et al: Forschungsmethodik in den Ingenieurwissenschaften : Skript vom Lehrstuhl für Produktentwicklung, Prof. Dr.-Ing. Udo Lindemann, Technische Universität München (TUM), 2012, p. 63.

Avoid secondary citations! An example

TUHH
Technische Universität Hamburg

A conference paper cited a lot

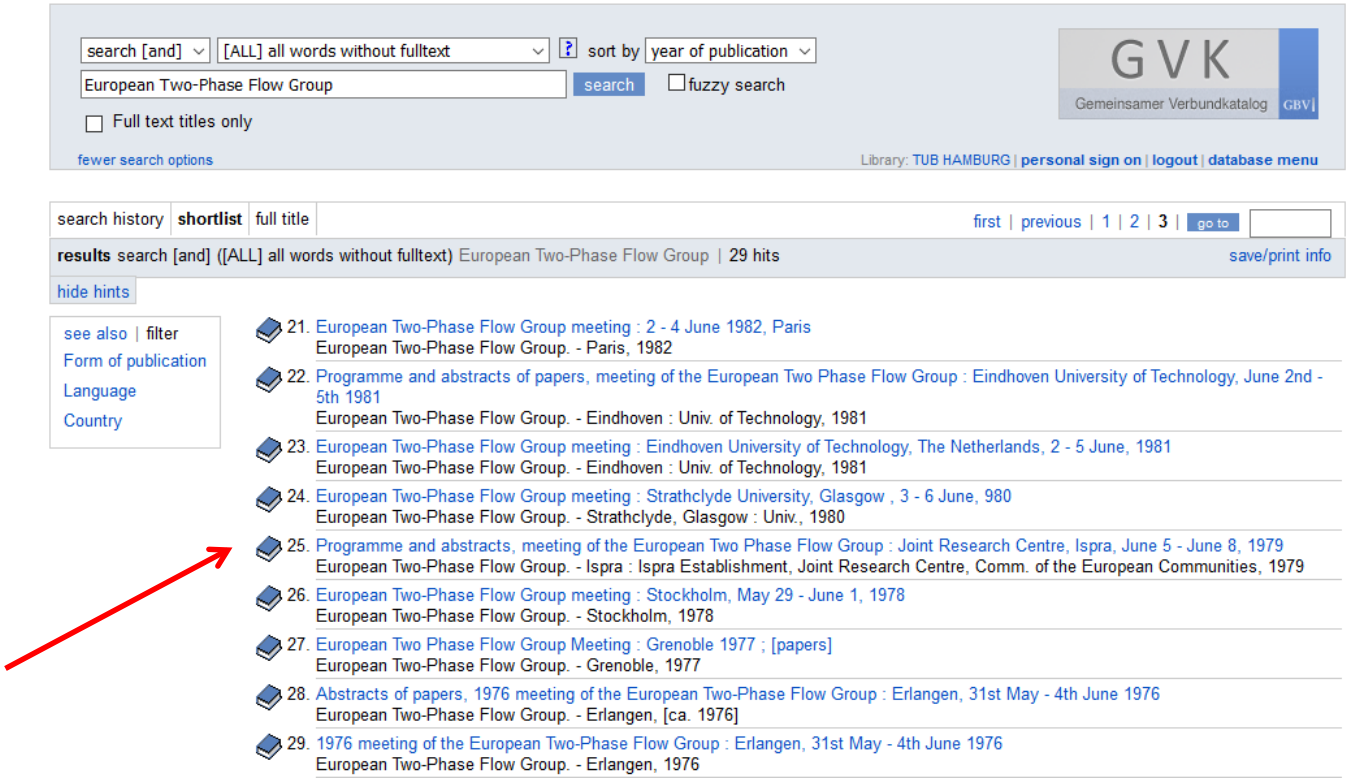
Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow, European Two-Phase Flow Group Meeting, Ispra, Italy, June, Paper E2.

Locating paper via interlibrary loan!

TUHH
Technische Universität Hamburg

Searching the catalog of the GBV Common Library Network (https://www.gbv.de/?set_language=en resp. https://kxp.k10plus.de/DB=2.1/LNG=EN/):

Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow, European Two-Phase Flow Group Meeting, Ispra, Italy, June, Paper E2.



Accessible at TIB Hannover!

TUHH
Technische Universität Hamburg

Searching the catalog of the GBV Common Library Network:

Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow, European Two-Phase Flow Group Meeting, Ispra, Italy, June, Paper E2.

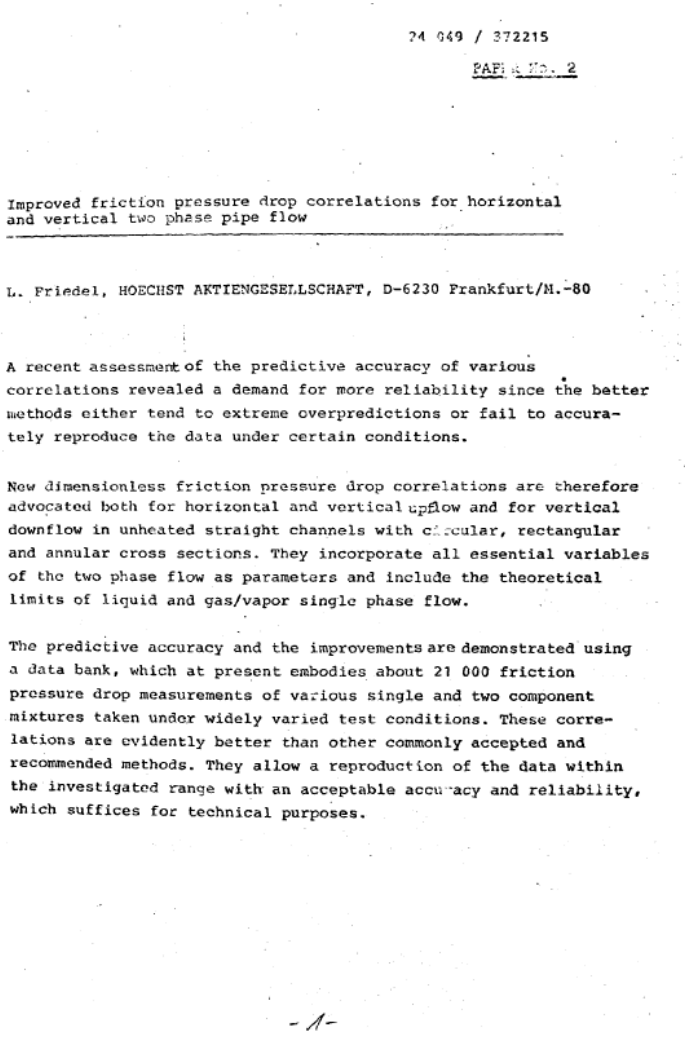
Getting the paper via interlibrary loan!

TUHH
Technische Universität Hamburg

Accessible is only the abstract!

Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow, European Two-Phase Flow Group Meeting, Ispra, Italy, June, Paper E2.

And now?



24 049 / 372215

PAPER No. 2

Improved friction pressure drop correlations for horizontal and vertical two phase pipe flow

L. Friedel, HOECHST AKTIENGESELLSCHAFT, D-6230 Frankfurt/M.-80

A recent assessment of the predictive accuracy of various correlations revealed a demand for more reliability since the better methods either tend to extreme overpredictions or fail to accurately reproduce the data under certain conditions.

New dimensionless friction pressure drop correlations are therefore advocated both for horizontal and vertical upflow and for vertical downflow in unheated straight channels with circular, rectangular and annular cross sections. They incorporate all essential variables of the two phase flow as parameters and include the theoretical limits of liquid and gas/vapor single phase flow.

The predictive accuracy and the improvements are demonstrated using a data bank, which at present embodies about 21 000 friction pressure drop measurements of various single and two component mixtures taken under widely varied test conditions. These correlations are evidently better than other commonly accepted and recommended methods. They allow a reproduction of the data within the investigated range with an acceptable accuracy and reliability, which suffices for technical purposes.

-1-

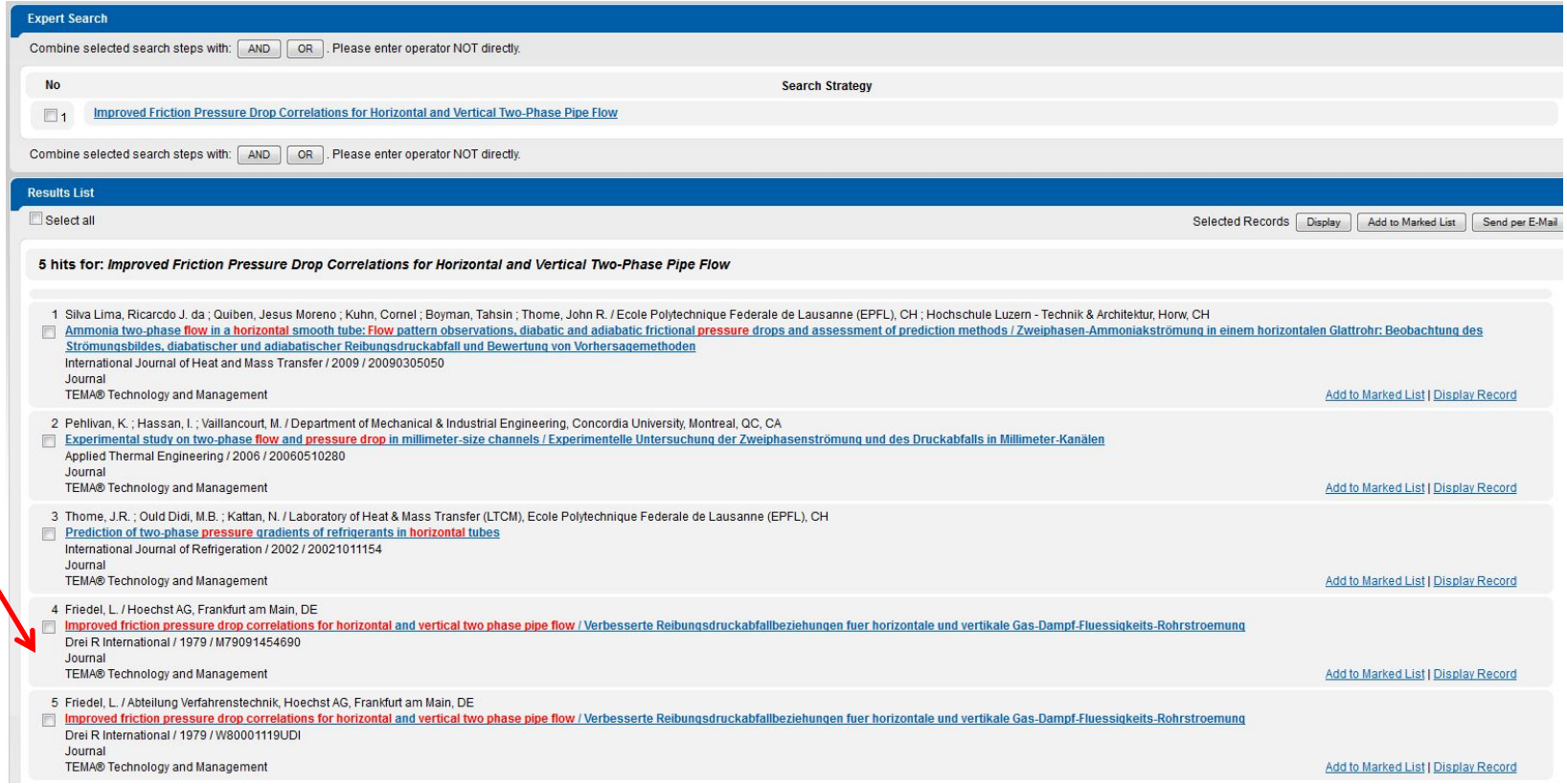
Kopie von subito e.V., geliefert für Univ.-Bibl. der TU Hamburg-Harburg (HSL9700217)

Searching the paper in an engineering database!

TUHH
Technische Universität Hamburg

Database: TEMA Technology and Management from wti-Frank

Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow, European Two-Phase Flow Group Meeting, Ispra, Italy, June, Paper E2.

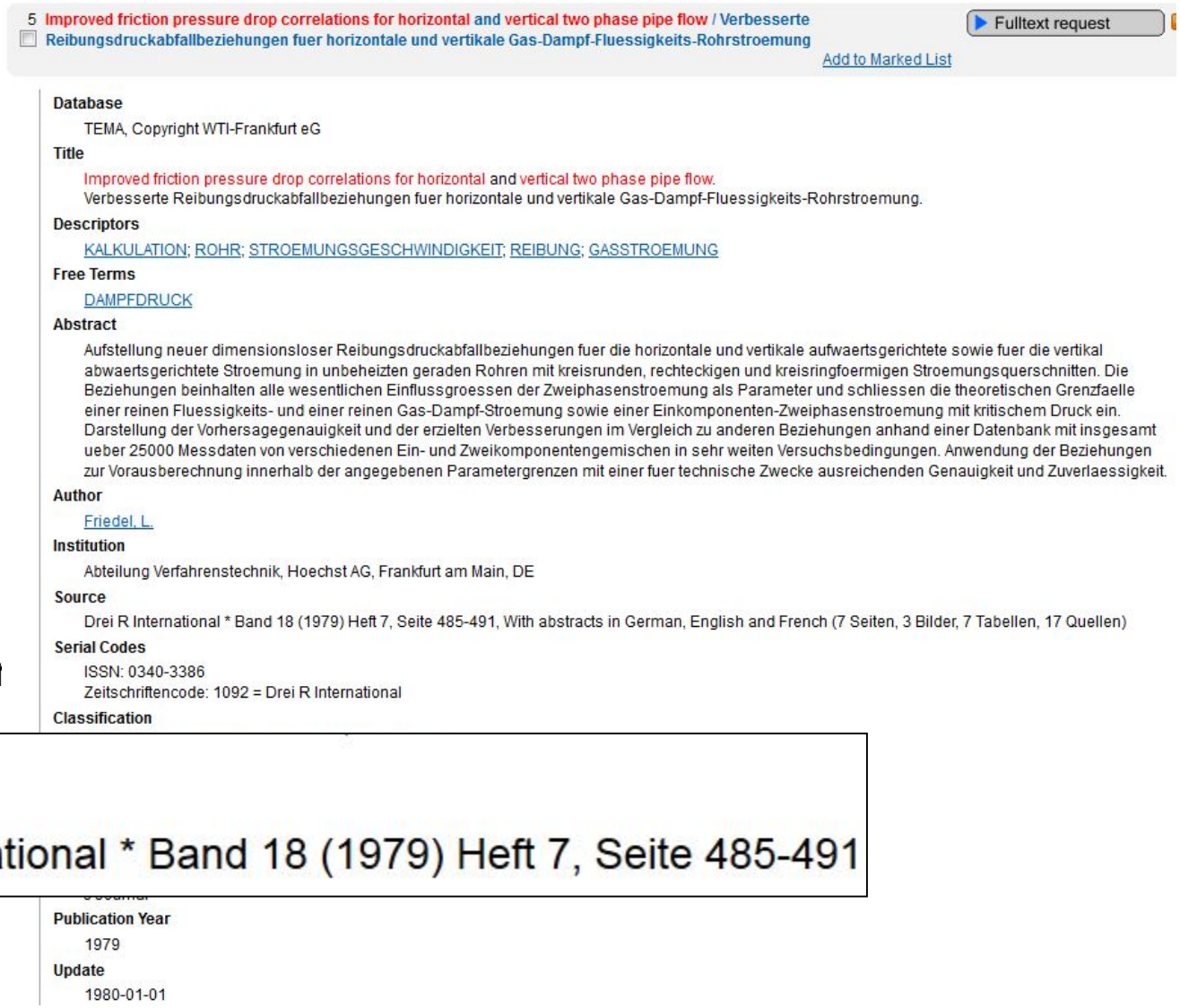


Complete paper appeared in a journal!

TUHH
Technische Universität Hamburg

Result in TEMA:

Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow, European Two-Phase Flow Group Meeting, Ispra, Italy, June, Paper E2.



5 Improved friction pressure drop correlations for horizontal and vertical two phase pipe flow / Verbesserte Reibungsdruckabfallbeziehungen fuer horizontale und vertikale Gas-Dampf-Fluessigkeits-Rohrstroemung

Fulltext request

Add to Marked List

Database
TEMA, Copyright WTI-Frankfurt eG

Title
Improved friction pressure drop correlations for horizontal and vertical two phase pipe flow.
Verbesserte Reibungsdruckabfallbeziehungen fuer horizontale und vertikale Gas-Dampf-Fluessigkeits-Rohrstroemung.

Descriptors
KALKULATION; ROHR; STROEMUNGSGESCHWINDIGKEIT; REIBUNG; GASSTROEMUNG

Free Terms
DAMPFDRUCK

Abstract
Aufstellung neuer dimensionsloser Reibungsdruckabfallbeziehungen fuer die horizontale und vertikale aufwaertsgerichtete sowie fuer die vertikal abwaertsgerichtete Stroemung in unbeheizten geraden Rohren mit kreisrunden, rechteckigen und kreisringfoermigen Stroemungsquerschnitten. Die Beziehungen beinhalten alle wesentlichen Einflussgroessen der Zweiphasenstroemung als Parameter und schliessen die theoretischen Grenzfaelle einer reinen Fluessigkeits- und einer reinen Gas-Dampf-Stroemung sowie einer Einkomponenten-Zweiphasenstroemung mit kritischem Druck ein. Darstellung der Vorhersagegenauigkeit und der erzielten Verbesserungen im Vergleich zu anderen Beziehungen anhand einer Datenbank mit insgesamt ueber 25000 Messdaten von verschiedenen Ein- und Zweikomponentengemischen in sehr weiten Versuchsbedingungen. Anwendung der Beziehungen zur Vorausberechnung innerhalb der angegebenen Parametergrenzen mit einer fuer technische Zwecke ausreichenden Genauigkeit und Zuverlaessigkeit.

Author
Friedel, L.

Institution
Abteilung Verfahrenstechnik, Hoechst AG, Frankfurt am Main, DE

Source
Drei R International * Band 18 (1979) Heft 7, Seite 485-491, With abstracts in German, English and French (7 Seiten, 3 Bilder, 7 Tabellen, 17 Quellen)

Serial Codes
ISSN: 0340-3386
Zeitschriftencode: 1092 = Drei R International

Classification

Publication Year
1979

Update
1980-01-01

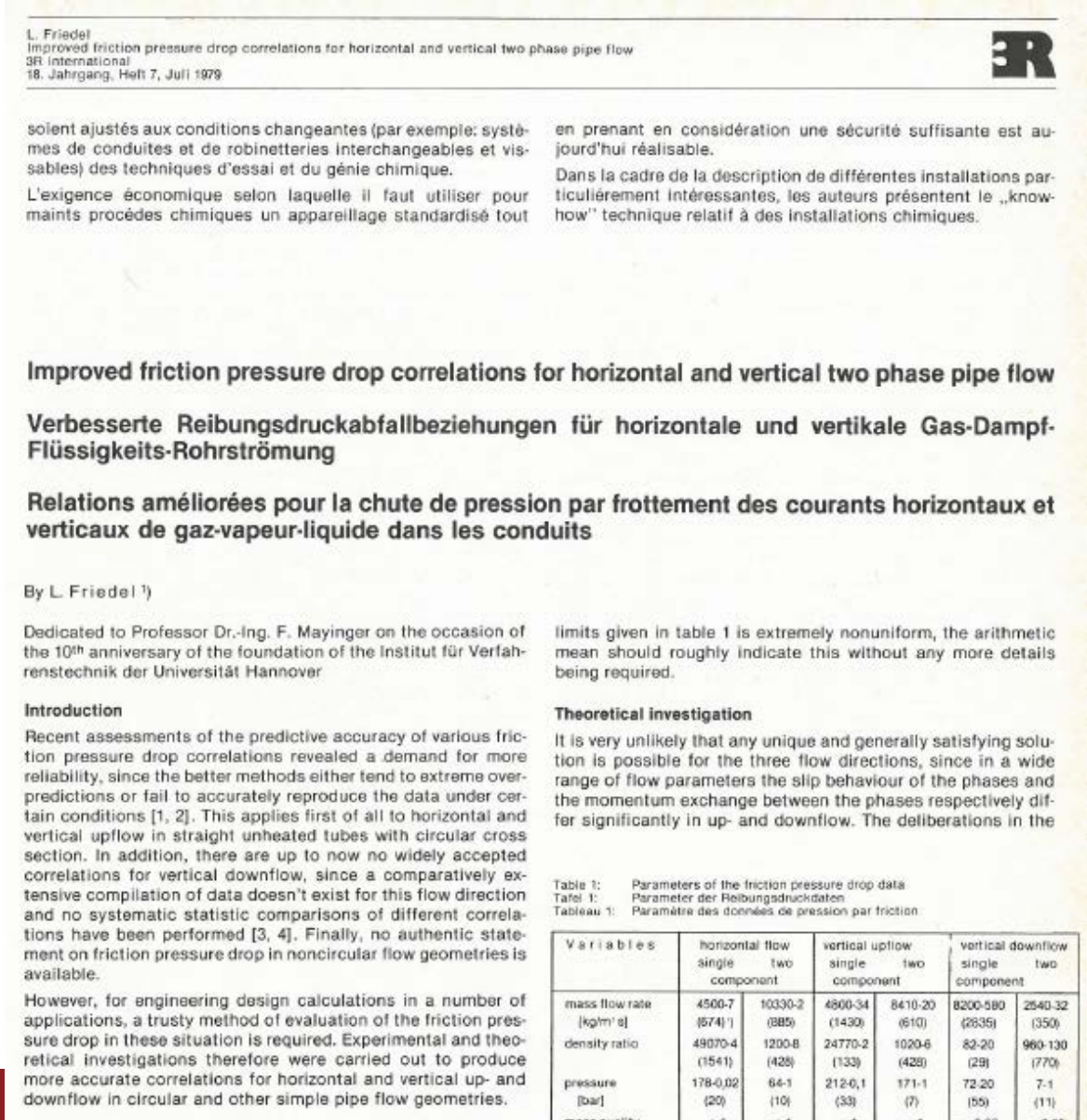
Source

Drei R International * Band 18 (1979) Heft 7, Seite 485-491

Journal in print available at TUHH library!

TUHH
Technische Universität Hamburg

Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow, European Two-Phase Flow Group Meeting, Ispra, Italy, June, Paper E2.



L. Friedel
Improved friction pressure drop correlations for horizontal and vertical two phase pipe flow
3R International
18. Jahrgang, Heft 7, Juli 1979

3R

soient ajustés aux conditions changeantes (par exemple: systèmes de conduites et de robinetteries interchangeables et visables) des techniques d'essai et du génie chimique.

L'exigence économique selon laquelle il faut utiliser pour maints procédes chimiques un appareillage standardisé tout en prenant en considération une sécurité suffisante est aujourd'hui réalisable.

Dans la cadre de la description de différentes installations particuliérement intéressantes, les auteurs présentent le „know-how" technique relatif à des installations chimiques.

Improved friction pressure drop correlations for horizontal and vertical two phase pipe flow

Verbesserte Reibungsdruckabfallbeziehungen für horizontale und vertikale Gas-Dampf-Flüssigkeits-Rohrströmung

Relations améliorées pour la chute de pression par frottement des courants horizontaux et verticaux de gaz-vapeur-liquide dans les conduits

By L. Friedel [1])

Dedicated to Professor Dr.-Ing. F. Mayinger on the occasion of the 10th anniversary of the foundation of the Institut für Verfahrenstechnik der Universität Hannover

Introduction

Recent assessments of the predictive accuracy of various friction pressure drop correlations revealed a demand for more reliability, since the better methods either tend to extreme overpredictions or fail to accurately reproduce the data under certain conditions [1, 2]. This applies first of all to horizontal and vertical upflow in straight unheated tubes with circular cross section. In addition, there are up to now no widely accepted correlations for vertical downflow, since a comparatively extensive compilation of data doesn't exist for this flow direction and no systematic statistic comparisons of different correlations have been performed [3, 4]. Finally, no authentic statement on friction pressure drop in noncircular flow geometries is available.

However, for engineering design calculations in a number of applications, a trusty method of evaluation of the friction pressure drop in these situation is required. Experimental and theoretical investigations therefore were carried out to produce more accurate correlations for horizontal and vertical up- and downflow in circular and other simple pipe flow geometries.

limits given in table 1 is extremely nonuniform, the arithmetic mean should roughly indicate this without any more details being required.

Theoretical investigation

It is very unlikely that any unique and generally satisfying solution is possible for the three flow directions, since in a wide range of flow parameters the slip behaviour of the phases and the momentum exchange between the phases respectively differ significantly in up- and downflow. The deliberations in the

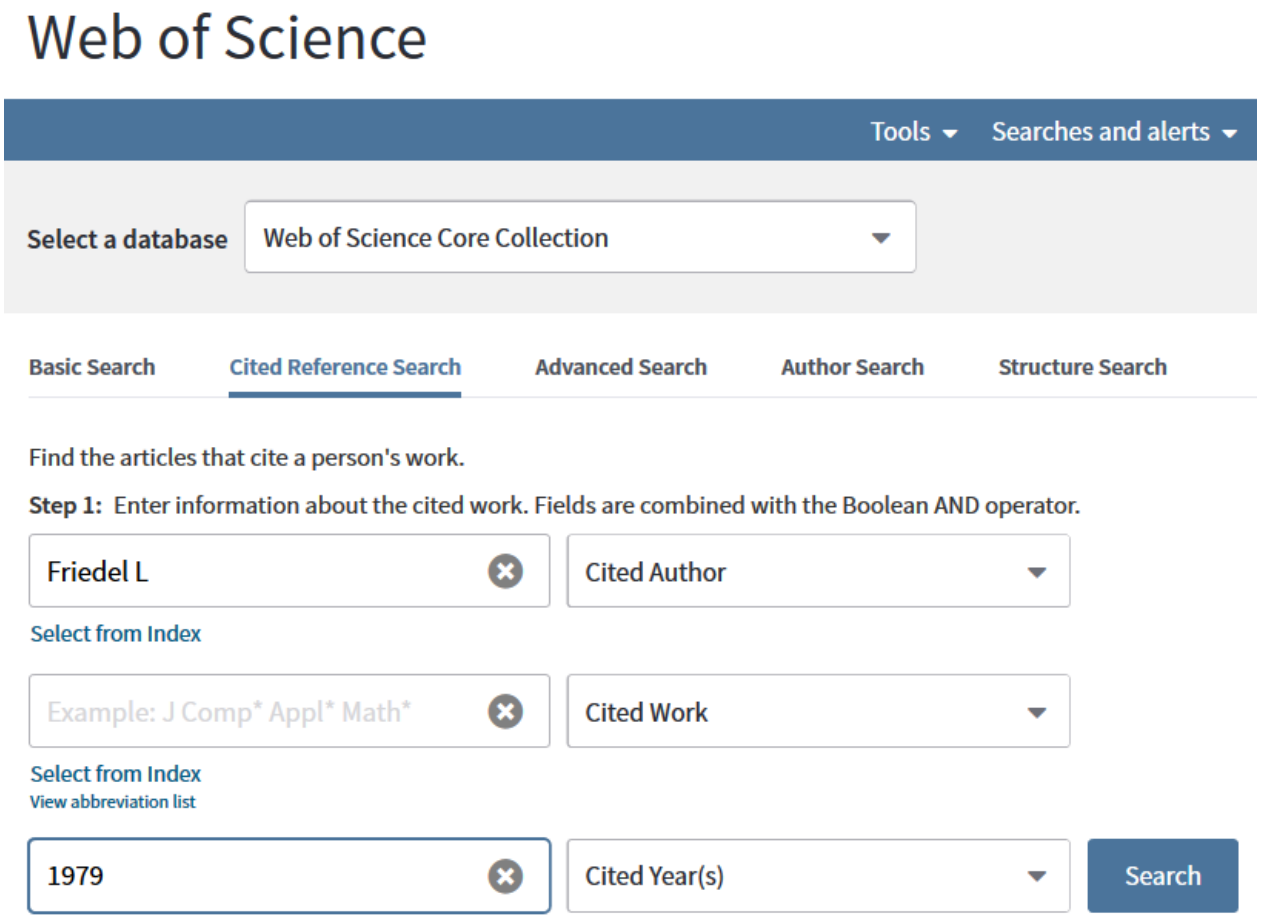
Table 1: Parameters of the friction pressure drop data
Tafel 1: Parameter der Reibungsdruckdaten
Tableau 1: Paramètre des données de pression par friction

Variables	horizontal flow single component	horizontal flow two component	vertical upflow single component	vertical upflow two component	vertical downflow single component	vertical downflow two component
mass flow rate [kg/m² s]	4500-7 (574) [1])	10330-2 (885)	4800-34 (1430)	8410-20 (610)	8200-580 (2635)	2540-32 (350)
density ratio	49070-4 (1541)	1200-8 (428)	24770-2 (133)	1020-6 (428)	82-20 (29)	960-130 (770)
pressure [bar]	178-0,02 (20)	64-1 (10)	212-0,1 (33)	171-1 (7)	72-20 (55)	7-1 (11)

Searching for paper in database Web of Science!

TUHH
Technische Universität Hamburg

Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow, European Two-Phase Flow Group Meeting, Ispra, Italy, June, Paper E2.



Versions of citing Friedel's paper

TUHH
Technische Universität Hamburg

Searching the database „Web of Science"!

The correct citation:

Friedel, L. (1979). Improved Friction Pressure Drop Correlations for Horizontal and Vertical Two-Phase Pipe Flow. In: 3 R-International, 18, 7, 485-491.

„Mixture" 8-)

Friedel, L.	3R INT J PIPING ENG	Improved friction pressure drop correlations for...	1979	87		485		1
Friedel, L.	3R INT	Improved friction pressure drop correlations for...	1979	18	7	485		85
FRIEDEL L	E2 EUR 2 PHAS FLOW G		1979					2
FRIEDEL L	E2 EUR 2 PHAS GROUP		1979					2
FRIEDEL L	E2 ISPR		1979					1
FRIEDEL L	EUR 2 PHAS FLOW GRO		1979					1
FRIEDEL L	EUR 2 PHAS FLOW GROU		1979			5		1
FRIEDEL L	EUR 2 PHAS FLOW GROU		1979			C2		1
FRIEDEL L	EUR 2 PHAS FLOW M 7		1979					1
FRIEDEL L	EUR 2 PHAS FLOW M IS		1979					1
FRIEDEL L	EUR 2 PHAS GROUP M I		1979			1		9
FRIEDEL L	EUR 2 PHAS GROUP M J		1979					1
FRIEDEL L	EUR 2 PHASE FLOW G E		1979	2		485		2
FRIEDEL L	EUR 2 PHASE FLOW GP		1979					1
FRIEDEL L	EUR 2 PHASE GROUP M		1979					1
Friedel, L.	EUR 2 PHAS FLOW GR M	Improved Friction Pressure Drop Correlations for...	1979	2				1
FRIEDEL L	EURO 2 PHASE FLOW GR		1979					1
Friedel, L	HIPS S OXF SEPT 1979	New friction pressure drop correlations for upward,...	1979					1
Friedel, L.	IMPROVED FRICTION PR		1979					12
Friedel, L.	MAT EUR 2 PHAS FLOW		1979					1
Friedel , L.	EUR 2 PHAS FLOW GR M	Improved friction pressure drop correlations for...	1979					4
Friedel, L.	EUR 2 PHAS FLOW GROU	Improved friction pressure drop correlations for...	1979					346
Friedel, L.	EUR 2 PHAS FLOW GRP	Improved Friction Pressure Drop Correlations for...	1979					1
Friedel, L	EUR 2 PHAS GROUP M I	Improved friction pressure drop correlations for...	1979					55
Friedel, L.	EUR 2 PHAS GROUP N I	Improved friction pressure drop correlations for...	1979					1

Informing – Points to survive

TUHH
Technische Universität Hamburg

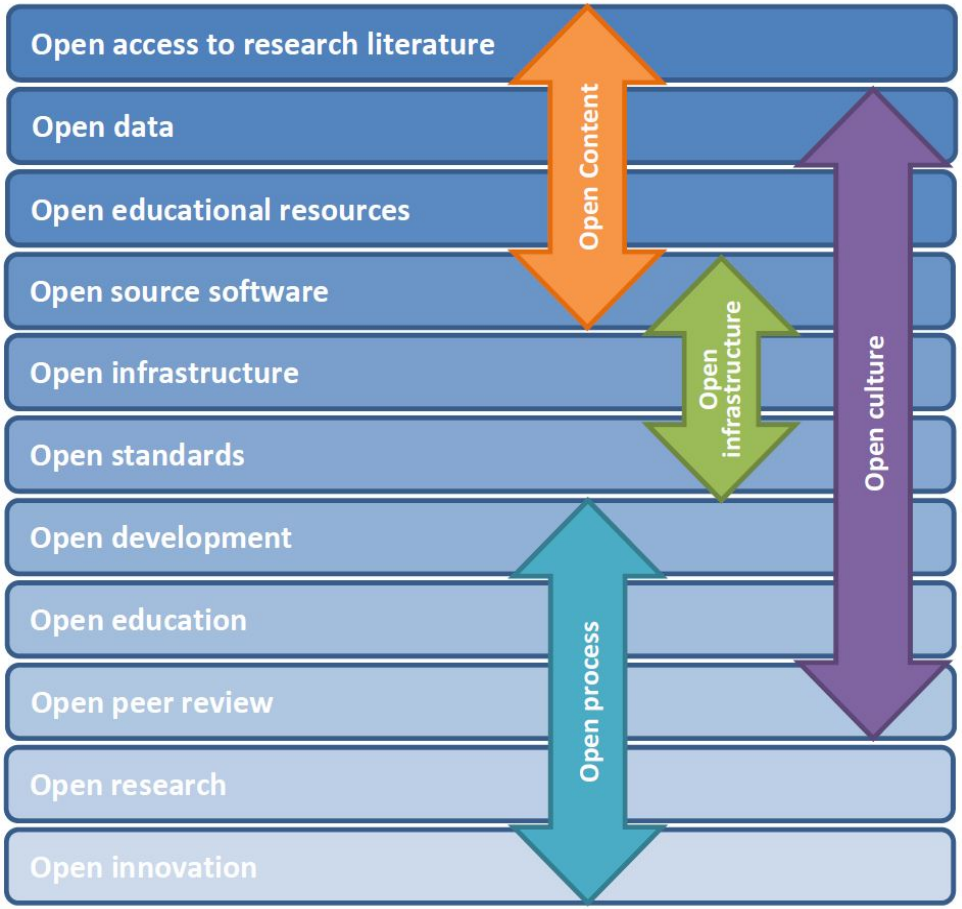
1. Orientation before searching.
2. Don‘t trust only one information source.
3. In case you are asked for your login or for your credit card, remember the library …
4. When searching: „Bulls*** in, bulls*** out.“
5. When finding information - think already of its further processing respectively later publication of your research results.
6. Keeping current …
7. Reflect on information and on your own information behavior

https://www.tub.tuhh.de/en/find/subject-information/informing-points-to-survive/

On openness

Openness of knowledge

TUHH
Technische Universität Hamburg



Graphics: e-InfraNet: 'Open' as the default modus operandi for research and higher education (2013), p. 11 http://tinyurl.com/diversity-openness
CC-BY-SA 3.0 Lizenz

A definition:
„Knowledge is open if anyone is free to access, use, modify, and share it — subject, at most, to measures that preserve provenance and openness."

http://opendefinition.org/od/2.1/en/

OPEN KNOWLEDGE

https://okfn.org/

Publishing Open Access

TUHH
Technische Universität Hamburg

„Open Access is a strategic aim of TUHH“

Presidium of TUHH 20.03.2013

Free and unhindered access to scholarly information for anybody!

The Golden Road:
First publication in Open Access journal

- Articles in peer-reviewed Open Access journals
- Finding the right journal: Directory of Open Access Journals www.doaj.org
- Publication fees: Support by Publishing Fund of TUHH

DOAJ DIRECTORY OF OPEN ACCESS JOURNALS

OPEN ACCESS

The Green Road:
Parallel publication of pre- and postprints as Open Access

- Practicing the right to publish pre-/post-prints as secondary publication
- Self archiving via TUBdok: Open Access Repository of the TUHH
- What is allowed by my publisher: Open Access Policies www.sherpa.ac.uk/romeo/

SHERPA/RoMEO

https://www.tub.tu-harburg.de/en/openaccess/

Using open licences

TUHH
Technische Universität Hamburg

A modular system for securing some intellectual property rights:

creative commons

Share – Adapt – Remix

Photo: TilarX / Flickr
https://www.flickr.com/photos/tylerstefanich/2117633427/
CC BY 2.0 (https://creativecommons.org/licenses/by/2.0/)

MOST OPEN

	CC 0	Public Domain
	CC BY 4.0	Attribution (Indicate if changes were made)
	CC BY-SA 4.0	Attribution-ShareAlike
	CC BY-ND 4.0	Attribution-NoDerivatives
	CC BY-NC 4.0	Attribution-NonCommercial
	CC BY-NC-SA 4.0	Attribution-NonCommercial-ShareAlike
	CC BY-NC-ND 4.0	Attribution-NonCommercial-NoDerivatives

LEAST OPEN

CC-Graphics: http://creativecommons.org/examples / CC BY 4.0 (http://creativecommons.org/licenses/by/4.0/)

Looking for specialized information more systematically

Beyond Google!
FindING @ TUHH-Bibliothek

TUHH
Technische Universität Hamburg

First orientation

Library website: https://www.tub.tuhh.de/en/
Subject groups in reading room
Encyclopedias and other reference works

Catalog

Media - digital (TUHH intranet!) or printed (reading rooms, closed stacks)
https://katalog.tub.tuhh.de/?mylang=en

Actual research information

Reference databases for journal articles:
TEMA, Web of Science (WoS), Scopus

Civil engineering: RSWB, Scopus, TEMA
Electrical engeineering: Scopus, TEMA, WoS, (IEEE)
Mechanical engineering: Scopus. TEMA, WoS
Process engineering: Scopus, TEMA, WoS
Business sciences: Business Source Premier, Scopus, TEMA, WoS

Specials

German DIN standards online!

Patents: Esp@cenet, DEPATISnet

Interlibrary loan and document delivery

PROCESS ENGINEERING INFORMATION @ TUHH

General & Background Information → Practical & Useful Data → Detailed, Original Research

Encyclopedias Dictionaries

Ullmann's Encyclopedia of Industrial Chemistry - 2017 ed.

Comprehensive biotechnology (2. ed., 2011)

Comprehensive Renewable Energy (2013)
All online within TUHH intranet

Further printed reference works in the reading room

Reference Texts Books

Reading room areas:

CH Chemistry, VT Process Engineering, BT Biotechnology, US Environmental Engineering, GTF Harzardous Materilas, WK Materials Sciences

E-Books online within intranet

Selected from publishers like Springer, Wiley, Elsevier (ScienceDirect), Hanser, De Gruyter etc.

Safety Information Regulations Standards

Merkblätter Gefährliche Arbeitsstoffe
Data on harzardous substances with safety instructions and data sheets
http://tinyurl.com/merkblaetter

umwelt-online.de
Texts of German laws, regulations and rules concerning health and safety, harzardous substances etc.

German DIN Standards
Standards database Perinorm offers full texts of German standards (DIN, VDI)

Substance Property Data

Aldrich Handbook
Free site by the company Sigma-Aldrich, providing useful data for a wide range of compounds.

ChemSpider
Containing spectra as well as physical, environmental data, basic property and safety information etc. Searching by names, substructures, CAS registry numbers possible.

NIST Chemistry WebBook
Containing high quality, critically reviewed data compiled by the National Institute of Standards and Technology (NIST), predominantly organic.

Further printed sources
https://www.tub.tuhh.de/en/substance-property-data/

Journal Articles Patents

Web of Science
Database indexing leading science and engineering journals (Science Citation Index), also social sciences & humanities, featuring cited reference searching. Coverage goes back to 1945.

TEMA® Technology and Management
Containing references from German and international technical literature, also conference proceedings. Coverage goes back to 1968.

SciFinder
Chemical Abstracts from the American Chemical Society (ACS), extensive coverage of all chemistry literature back to 1907. Not available @TUHH.

Patents
https://www.tub.tuhh.de/en/find/patents/

Thomas Hapke, Subject Librarian, TUHH, hapke@tuhh.de
https://www.tub.tuhh.de/en/process-and-chemical-engineering/
Adopted from: Crystal Boyce. "Chemistry Lab Poster" Chemistry (2016)
Available at: http://works.bepress.com/crystal_boyce/12/
This work is licensed under a Creative Commons CC_BY-NC-SA International License.
Clipart from openclipart.org CC0 (PD).

tub. TUHH Technische Universität Hamburg

https://doi.org/10.5281/zenodo.1086617

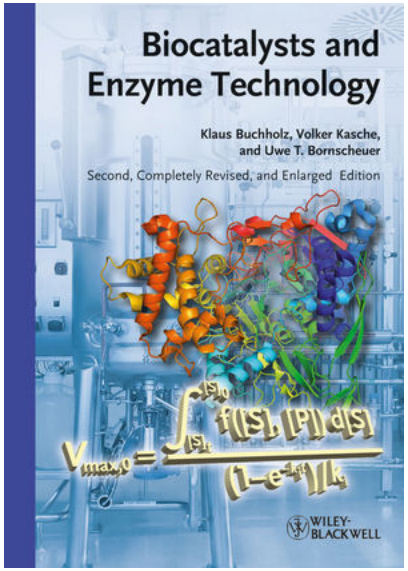
Articles' databases: Diversity and outcome

TUHH
Technische Universität Hamburg

Database	GVK (GBV Common Library Network)	PubMed, TEMA (wti), Web of Science, Scopus	Publishers' portals: Wiley, SpringerLink, ScienceDirect, …	Google Scholar, BASE (Bielefeld Acad. Search Engine)
Content	books, journals, few articles, and more	Articles, (conference papers)	articles, books, book chapters	articles, books, files, and more
Searchable content	bibliographical description	bibliographical description, abstracts	bibliographical description, abstracts, full text	full text
Content from	printed and electronic holdings of libraries	diverse publishers	only publisher, here e.g. Springer	who knows? 8-)
Access to full text	directly in libraries, good for ordering articles via interlibary loan	through other databases, link resolver or interlibrary loan	directly, in case access is part of subscription	directly, access maybe restricted

Want to know a little bit more?!

TUHH
Technische Universität Hamburg



Hapke, Thomas: The world of processing engineering and biotechnology information : seven points for reflecting on your information behavior. 2017.
https://doi.org/10.15480/882.1500

Updated and modified version of:

Appendix I. The world of biotechnology information: seven points for reflecting on your information behavior.

In: Buchholz, K., Kasche, V., Bornscheuer, U.T.: Biocatalysts and Enzyme Technology. 2. ed. Wiley-VCH, 2012, S. 553-564.

At the end something general

TUHH
Technische Universität Hamburg

Some general hints and key competences when managing information

- Be prepared for constant change.
- Know your skills and limits!
- Tolerate ambiguity and differences.
- Don‘t give up too early.
- Be aware that every fact is the result of an act, that information has been created by somebody with a certain purpose.

According: T. Hapke: Informationskompetenz in einer neuen Informationskultur. In: Handbuch Informationskompetenz, S. 36-48. Ed. W. Sühl-Strohmenger. Berlin: De Gruyter Saur, 2012.

Contact

TUHH
Technische Universität Hamburg
tub.

Thomas Hapke

Web: https://www.tuhh.de/b/hapke/
Blog: https://blog.hapke.de
Tweets: https://twitter.com/thapke

Library Webpage for Project Design Course (Process Engineering) 2020 at https://www.tub.tuhh.de/en/process-and-chemical-engineering/process-design-course/

Informing – Points to survive at https://www.tub.tuhh.de/en/subject-information/informing-points-to-survive/