TEST OF DTU RESEARCH ANALYTICS PLATFORM, COLLABORATION MODULE

Feedback, Enhancements, and Status

OPERA WP1 Project Report no. 2

February 21st 2020

Contributor Credits

Specified using the [CRediT Taxonomy](#) contributor roles:

Conceptualization
Ideas; formulation or evolution of overarching research goals and aims

Methodology
Development or design of methodology; creation of models

Software
Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components

Validation
Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs

Formal Analysis
Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data

Investigation
Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection

Resources
Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools

Data Curation
Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse

Writing – Original Draft
Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)

Writing – Review & Editing
Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or postpublication stages

Visualization
Preparation, creation and/or presentation of the published work, specifically visualization/ data presentation

Supervision
Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team

Project Administration
Management and coordination responsibility for the research activity planning and execution

Funding Acquisition
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0. INTRODUCTION

DTU Research Analytics Platform (RAP) is an online service offering popular and standardized research analytics reports to DTU's research leadership and administration. Version 1 of DTU RAP was launched in May 2018 with a collaboration module including a detailed collaboration report. Version 2 of DTU RAP was launched in May 2019 with an updated collaboration module including a number of new features, tables, graphs, and indicators.

There are two data sources for DTU RAP:
- Web of Science for publication data pertaining to the university.
- InCites for bibliometric indicator data pertaining to the university and all its collaboration partners.

DTU RAP is based on VIVO open source software and ontology for research profiling, networking, and analytics. All the software developed to realize DTU RAP is also open source and available on GitHub. Any university with a similar Web of Science/InCites license may set up their own RAP using VIVO and RAP open source software[1].

0.1 EXECUTIVE SUMMARY

This report provides an overview of the two tests of DTU RAP that have been completed in the OPERA project. The report first summarizes the approach used for the tests and then presents the feedback from the test participants as well as the resulting changes to DTU RAP following each of the two tests.

1. TEST APPROACH

Two tests of the collaboration module of DTU RAP have been carried out. The purpose of the tests have been to evaluate DTU RAP in terms of usability and functionality. The first test took place in Q1 2018 and the second test in Q4 2019. Test participants included DTU RAP users as well as Danish and international OPERA project partners. For each test, a test guide was developed to assist the participants in the test of DTU RAP.

2. FIRST TEST: Q1 2018

The test guide developed for the test (Appendix A) was very detailed inviting participants to comment on a number of functionality and usability aspects of the collaboration module

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[1] The OPERA report "Web of Science & InCites Data for VIVO Research Analytics Platform" provides an overview of the data sources used to develop DTU RAP as well as the data changes and enhancements completed to serve the use case of DTU RAP better.

including the collaboration module home page, the collaboration overview by country, and each of the sections of the collaboration report.

2.1 TEST FEEDBACK

Many of the test participants commented that DTU RAP was easy and intuitive to use, but the participants' feedback also reflected that DTU RAP was still in β at the time of the test. The feedback and recommendations for the future development of DTU RAP centered on:

- The formatting and terminology used which was somewhat rough.
- The absence of an option to download an Excel version of the collaboration report.
- The absence of visualizations/graphs.
- Suggestions to include more options for analyzing data by year, DTU department, DTU researcher, etc.
- Suggestions to add more bibliometric indicators for the universities and co-publications.
- Suggestions to elaborate on the data sources of DTU RAP, last update, limitations, etc.

3. CHANGES AND ENHANCEMENTS AFTER THE FIRST TEST

3.1 DTU RAP VERSION 1

Based on the feedback from the first test a number of changes and enhancements were made to DTU RAP during Q2 2018. The focus was on the changes that could be implemented fairly quickly to avoid delaying the launch of the first version of DTU RAP. These changes included:

- Revision of the terminology, layout, and formatting to sharpen the user interface and to make the purpose of the various sections of the collaboration report clearer.

- Inclusion of an "About" section including information on the data sources and data enhancements of DTU RAP, date of last data update, etc.

- New features such as the possibility to select timespan and to search for a specific university.

While these changes were implemented, an Excel download of the collaboration report was designed and developed. This work was more time consuming, but as the Excel download was an important feature of the collaboration module, it needed to be finalized before the launch.

The first version of DTU RAP was launched in May 2018 to a select group of DTU users including the university leadership and the administrative teams working with international relations.

3.2 DTU RAP VERSION 2

After the launch of the first version of DTU RAP, the development of the collaboration module continued – still based on the feedback from the first test. A number of major changes to the

collaboration home page and the collaboration report were implemented during the following year:

- On the collaboration home page, the possibility to choose to explore DTU's collaboration for the entire university or a specific department was added.
- On the collaboration home page four different paths of exploration all leading to the collaboration report were added:
  - A world map
  - A list sorted by the countries with which DTU collaborates the most
  - A list sorted by the partner institutions with which DTU collaborates the most
  - A list sorted by the research subjects that DTU collaborates in the most
- A clickable table of contents was included in the collaboration report to make the navigation easier.
- A number of new indicators were added to the collaboration report including three impact indicators as well as indicators of industry and international collaboration.
- Three new tables were included in the collaboration report:
  - Collaboration by research subjects – top 20
  - Collaboration by DTU researcher – top 20
  - Collaboration by funder – top 20
- The tables of the collaboration report were supplemented by two figures showing the number of co-publications per year and the number of co-publications by top research subjects, respectively.

While these improvements were carried out, a plan for monthly data updates of DTU RAP was developed and later implemented.

With the launch of the second version of DTU RAP in May 2019, DTU RAP was officially put into operation. Besides the existing user base, a number of heads of departments also started using DTU RAP as a result of the new possibility to explore DTU's collaboration for a specific department.

4. SECOND TEST: Q4 2019

When the second version of DTU RAP had been in operation for half a year, a second test was initiated. In the test guide developed for this test (Appendix B), test participants were invited to use DTU RAP to try to answer a number of questions regarding DTU's collaboration with other countries and institutions. The purpose of the test was to understand if DTU RAP in fact enabled the participants to answer the questions. Following the test, participants were asked to share their feedback regarding the user experience and their suggestions for improving DTU RAP.

4.1 TEST FEEDBACK

Generally, test participants commented that DTU RAP was easy to navigate and intuitive to use. Participants were able to find the information that they were looking for and appreciated the speed at which they could get answers to the questions asked.

Some participants indicated a number of areas that could be addressed to improve the user experience and the data quality:

- DTU RAP would benefit from a few introductory words on the front page.
- Section 7 showing the collaboration by DTU researcher could be supplemented with the researchers' DTU departments as an additional service for the users of DTU RAP.
- Minimizing the number of duplicates of author names and funder names would improve data quality and result in a better overview of the relevant sections.

Finally, one participant came across a few glitches in the system that have since been addressed.

5. ENHANCEMENTS AND STATUS AFTER THE SECOND TEST

The most recent enhancement of DTU RAP is the addition of a detailed presentation of DTU RAP to the collaboration module home page and a "Notes and hints" section in the collaboration report itself. Combined these elements serve as an introduction to DTU RAP and as inspiration to the questions that can be answered using DTU RAP.

In the comings months, the development efforts will focus on a few pending data issues (e.g. funder data) as well as on refining the process for the monthly data updates.

The feedback provided by test participants during the two tests of DTU RAP has proved valuable and has helped guide the development of DTU RAP. Questions, observations, and suggestions from the test participants have been instrumental in focusing the efforts on the most important features e.g. easing navigation, adding more possibilities for data analysis, including a "download to Excel" option, adding new bibliometric indicators, improving data quality.

Today, DTU RAP has been in operation for almost a year, and the benefits are clear. An increasing number of users are accessing DTU RAP to retrieve the information they need about DTU's collaboration with other countries and institutions in a fast and flexible way. Through the collaboration reports and the different paths of exploration, DTU RAP delivers valuable insight to a broad user base thus facilitating DTU's collaboration with other universities.

APPENDIX A: TEST GUIDE FOR FIRST TEST

Test of the DTU Research Analytics Platform

As part of the DEFF-sponsored project "Research Output & Impact – Analyzed & Visualized" a Research Analytics Platform (RAP) has been developed based on the VIVO system and Web of Science-data.

The DTU RAP consists of two modules:
1. DTU collaboration (β test).
   The collaboration module of the RAP is designed to meet the needs of the leadership and management levels of the university and its departments. The collaboration module enables the user to explore the university's collaboration with other countries and universities.
2. DTU publications (α test).
   The publication module provides an entry point to the university's publications. Faceted search allows the user to refine the search results by e.g. subject category and journal.

The purpose of the test is to evaluate the collaboration module.

We recommend that you test the DTU RAP in two steps:
1. Start by exploring the DTU RAP on your own without reading the test guide on the following pages. This step might include going to the collaboration module and the world map as well as looking into the data for a country and a university.
2. Then test the DTU RAP using the test guide on the following pages. You do not have to answer all the questions, but you can provide comments/answers to the questions that you find relevant.

Link to the DTU RAP: http://rap.adm.dtu.dk/vivo

Please note the following:
- *The DTU RAP works in Chrome and Firefox, but not in Internet Explorer.*
- *The DTU RAP is currently based on Web of Science-data for DTU from 2007 to January 2018.*
- *The screenshots in the test guide are from December 17th 2017. The numbers in the current version of the DTU RAP differ from the ones in the screenshots.*
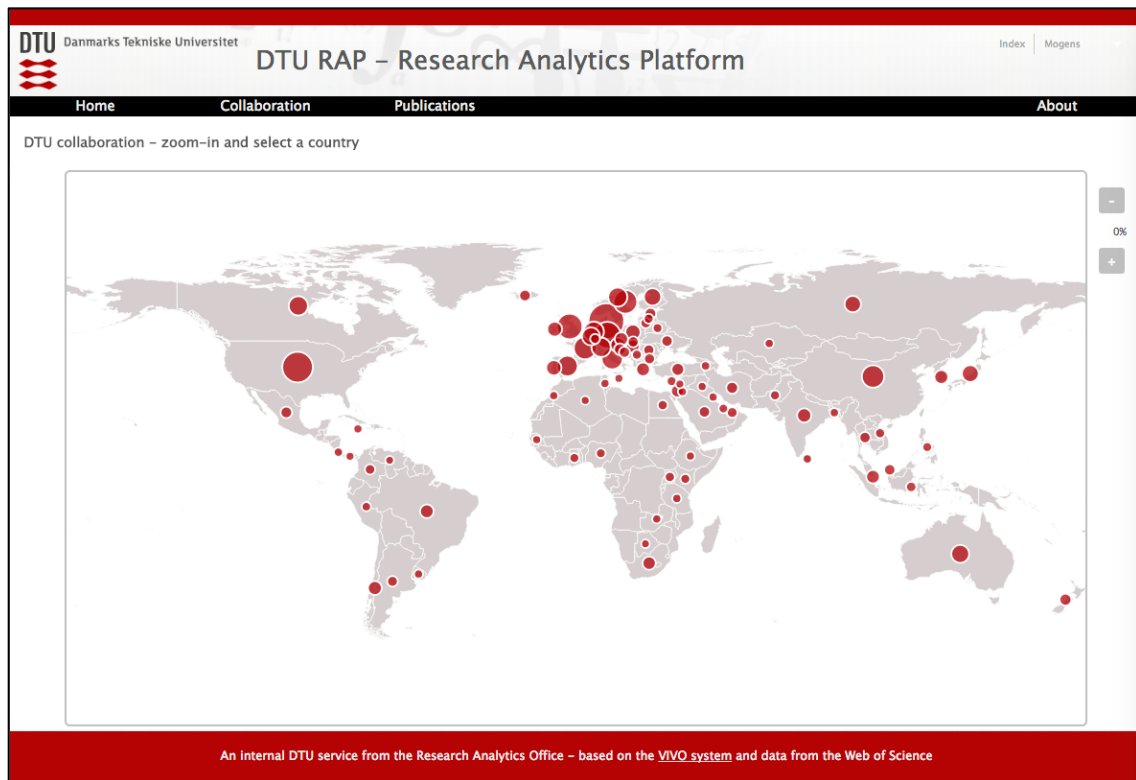
Test Guide

1. RAP HOME PAGE
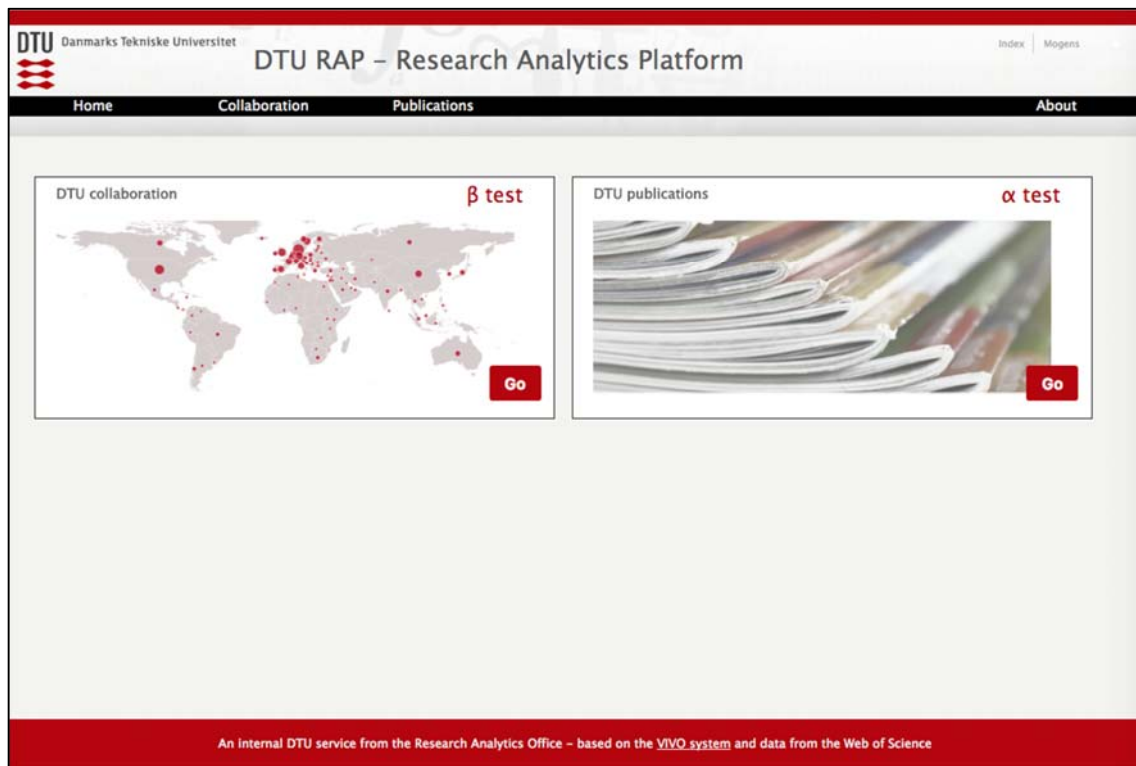
Comments to the page above (1. RAP home page)

- Is it easy to find and access the collaboration module?
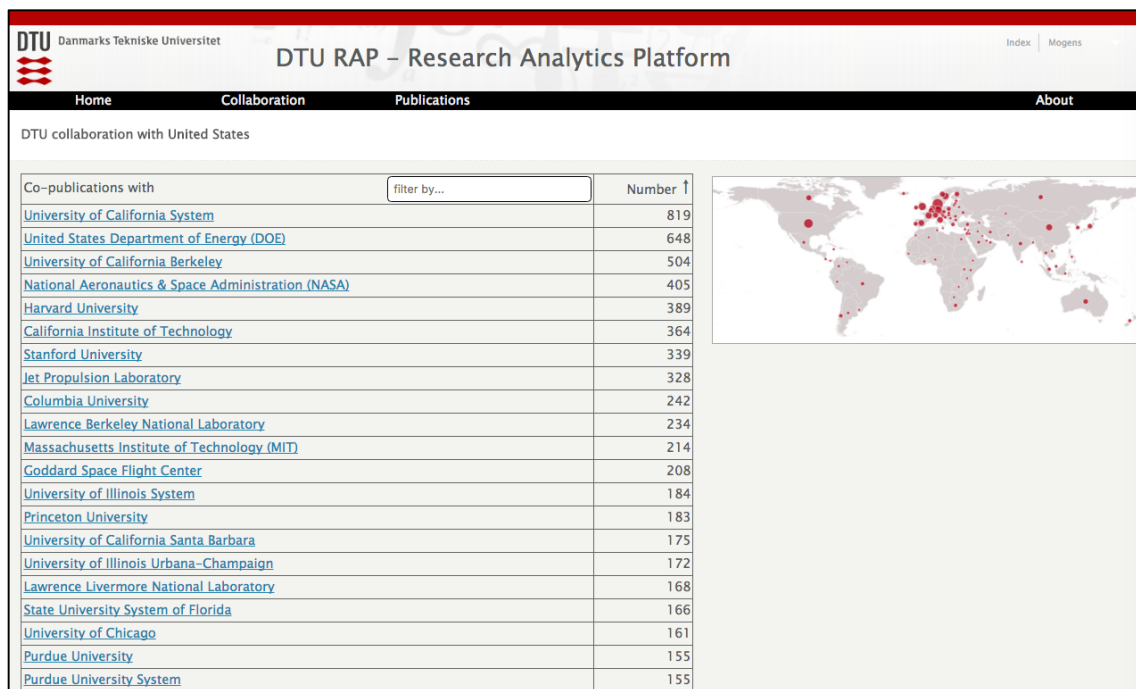- Are more instructions needed?
- Other comments

2. COLLABORATION MODULE START PAGE

Comments to the page above (2. Collaboration module start page)

- Is it clear where you are and what your options are?
- Are there features missing on this page?
- Did you discover the mouse-over info?
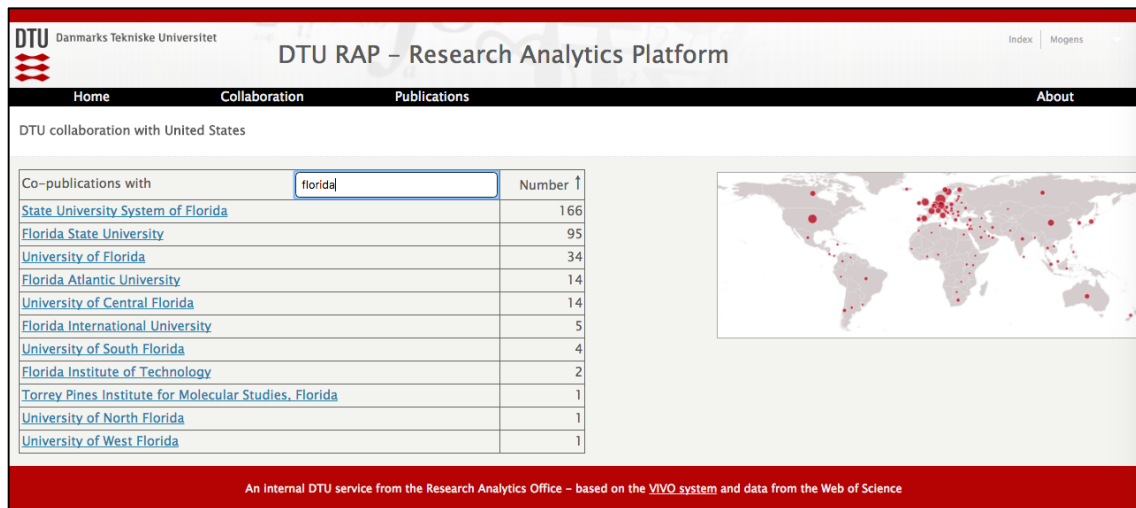- Are more instructions needed?
- Other comments

3. COLLABORATION OVERVIEW PER COUNTRY

Co-publications with		Number ↑
University of California System		819
United States Department of Energy (DOE)		648
University of California Berkeley		504
National Aeronautics & Space Administration (NASA)		405
Harvard University		389
California Institute of Technology		364
Stanford University		339
Jet Propulsion Laboratory		328
Columbia University		242
Lawrence Berkeley National Laboratory		234
Massachusetts Institute of Technology (MIT)		214
Goddard Space Flight Center		208
University of Illinois System		184
Princeton University		183
University of California Santa Barbara		175
University of Illinois Urbana–Champaign		172
Lawrence Livermore National Laboratory		168
State University System of Florida		166
University of Chicago		161
Purdue University		155
Purdue University System		155

Comments to the page above (3. Collaboration overview per country)

- Is it clear where you are and what your options are?
- Did you understand the "filter by" option?
- Are more instructions needed?
- Other comments

3.1. COLLABORATION OVERVIEW PER COUNTRY – FILTER APPLIED

Comments to the page above (3.1. Collaboration overview per country – filter applied)

- Is this feature useful and easy to use?
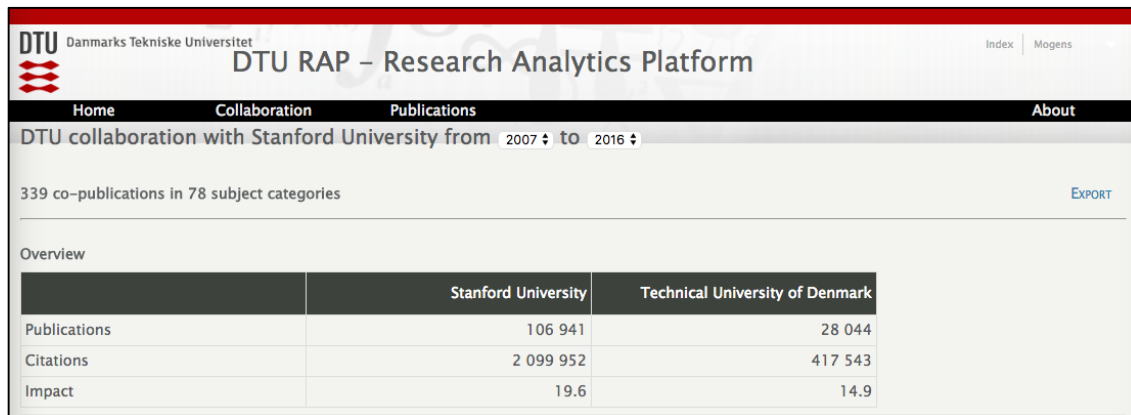- Are more instructions needed?
- Other comments

4. REPORT OF COLLABORATION WITH AN INDIVIDUAL INSTITUTION

The collaboration report currently has four parts (each part to be commented below)

      4.1. Overview of collaboration
      4.2. Publications per year
      4.3. Top research subjects
      4.4. Co-publications by department

At the end of this section, we ask for your overall comments to the collaboration report.

4.1. OVERVIEW OF COLLABORATION

DTU — Danmarks Tekniske Universitet

DTU RAP – Research Analytics Platform

Index | Mogens

Home | Collaboration | Publications | About

DTU collaboration with Stanford University from 2007 to 2016

339 co–publications in 78 subject categories   Export

Overview

	Stanford University	Technical University of Denmark
Publications	106 941	28 044
Citations	2 099 952	417 543
Impact	19.6	14.9

Comments to the page above (4.1. Overview of collaboration)

- Does this part of the report convey the right information?
- Should other information elements be added?
- Should some be removed?
- Is more explanation needed?
- Other comments

4.2. PUBLICATIONS PER YEAR

Number of publications per year

Year	Stanford University
2016	11 795
2015	12 899
2014	12 345
2013	11 443
2012	10 935
2011	10 258
2010	9 846
2009	9 535
2008	9 063
2007	8 822

Comments to the page above (4.2. Publications per year)

- Is the design usable and pleasant?
- Does this part of the report convey the right information?
- Should other information elements be added?
- Is more explanation needed?
- Other comments

4.3. TOP RESEARCH SUBJECTS

Top research subjects

Partner's top research subjects	Number	Collaboration top research subjects	Number
Oncology	5 871	Astronomy & Astrophysics	105
Neurosciences	5 254	Chemistry, Physical	64
Engineering, Electrical & Electronic	4 909	Multidisciplinary Sciences	27
Biochemistry & Molecular Biology	4 670	Materials Science, Multidisciplinary	26
Surgery	4 114	Chemistry, Multidisciplinary	23
Clinical Neurology	3 968	Nanoscience & Nanotechnology	21
Cardiac & Cardiovascular Systems	3 917	Physics, Atomic, Molecular & Chemical	20
Cell Biology	3 845	Physics, Applied	16
Radiology, Nuclear Medicine & Medical Imaging	3 756	Physics, Condensed Matter	14
		Engineering, Chemical	13
Physics, Applied	3 600	Biochemistry & Molecular Biology	12
Astronomy & Astrophysics	3 477	Engineering, Electrical & Electronic	11
Chemistry, Multidisciplinary	3 275	Energy & Fuels	10
Genetics & Heredity	2 938	Geosciences, Multidisciplinary	10
Psychiatry	2 728	Optics	9
Immunology	2 707	Biophysics	7
Materials Science, Multidisciplinary	2 592	Environmental Sciences	7
Hematology	2 590	Biotechnology & Applied Microbiology	6
Chemistry, Physical	2 381	Genetics & Heredity	6
Medicine, Research & Experimental	2 159	Geochemistry & Geophysics	6
Pediatrics	2 116		

4.3.1.

Comments to the page above (4.3. Top research subjects)

- Is this feature useful and easy to use?
- Is more explanation needed?
- Other comments

4.3.1. TOP RESEARCH SUBJECTS – PUBLICATION LISTS

DTU Danmarks Tekniske Universitet

DTU RAP – Research Analytics Platform

Index | Mogens

Home | Collaboration | Publications | About

Co-publications by category Physics, Atomic, Molecular & Chemical – DTU and Stanford University

20 total co-publications

Selective Electrochemical Generation of Hydrogen Peroxide from Water Oxidation 2015-11-05
FULL TEXT VIA DOI: 10.1021/acs.jpclett.5b02178   WEB OF SCIENCE: WOS:000364435800033
REFERENCES: 37 CITATIONS: 9

Direct observation of the dealloying process of a platinum–yttrium nanoparticle fuel cell cathode and its oxygenated species during the oxygen reduction reaction 2015-01-01
FULL TEXT VIA DOI: 10.1039/c5cp00283D   WEB OF SCIENCE: WOS:000363686800021
REFERENCES: 56 CITATIONS: 9

mBEEF: An accurate semi-local Bayesian error estimation density functional 2014-04-14
FULL TEXT VIA DOI: 10.1063/1.4870397   WEB OF SCIENCE: WOS:000334836600008
REFERENCES: 78 CITATIONS: 26

Hexamethylcyclopentadiene: time-resolved photoelectron spectroscopy and ab initio multiple spawning simulations 2014-01-01
FULL TEXT VIA DOI: 10.1039/c4cp00977k   WEB OF SCIENCE: WOS:000336796800080
REFERENCES: 61 CITATIONS: 13

Investigation of Catalytic Finite-Size-Effects of Platinum Metal Clusters 2013-01-03
FULL TEXT VIA DOI: 10.1021/jz3018286   WEB OF SCIENCE: WOS:000313142000032
REFERENCES: 28 CITATIONS: 89

DFT based study of transition metal nano-clusters for electrochemical NH3 production 2013-01-01
FULL TEXT VIA DOI: 10.1039/c3cp44641c   WEB OF SCIENCE: WOS:000318306100045
REFERENCES: 63 CITATIONS: 20

Platinum redispersion on metal oxides in low temperature fuel cells 2013-01-01
FULL TEXT VIA DOI: 10.1039/c2cp43248j   WEB OF SCIENCE: WOS:000314651900032
REFERENCES: 62 CITATIONS: 6

Comments to the page above (4.3.1. Top research subjects – publication lists)

- Is this feature useful and easy to use?
- Is the amount of information per publication suitable for an overview?
- Is more explanation needed?
- Other comments

4.4. CO-PUBLICATIONS BY DEPARTMENT

Co-publications by department		
DTU department	**Number**	**Stanford University department**
DTU Space	105	Show details
DTU Physics	82	Show details
DTU Systems Biology	29	Show details
DTU Nanotech	22	Show details
DTU Energy	15	Show details
DTU Compute	10	Show details
DTU Chemical Engineering	9	Show details
DTU Fotonik	9	Show details
DTU Aqua	8	Show details
DTU Chemistry	8	Show details
DTU Electrical Engineering	7	Show details
DTU Environment	6	Show details
Riso Natl Lab Sustainable Energy	6	Show details
DTU Biosustain	5	Show details
DTU Civil Engineering	5	Show details
DTU	3	Show details
DTU Bioinformatics	3	Show details
DTU Mechanical Engineering	3	Show details

4.4.1.

Comments to the page above (4.4. Co-publications by department)

- Is this feature useful and easy to use?
- Is more explanation needed?
- Other comments

4.4.1. CO-PUBLICATIONS BY DEPARTMENT WITH PARTNER DETAILS

Co–publications by department

DTU department	Number	Stanford University department
DTU Space	105	Show details
DTU Physics	82	Show details
DTU Systems Biology	29	Show details
DTU Nanotech	22	Show details
DTU Energy	15	Hide details
4.4.1.1. →	12	Dept Chem Engn
	4	SUNCAT Ctr Interface Sci & Catalysis
	2	Dept Mat Sci & Engn
	1	Dept Appl Phys
	1	Geballe Lab Adv Mat
	1	Stanford Inst Mat & Energy Sci
DTU Compute	10	Show details
DTU Chemical Engineering	9	Show details
DTU Fotonik	9	Show details
DTU Aqua	8	Show details
DTU Chemistry	8	Show details

Comments to the page above (4.4.1. Co-publications by department with partner details)

- Is this feature useful and easy to use?
- Is more explanation needed?
- Other comments

4.4.1.1. CO-PUBLICATIONS BY DEPARTMENT – PUBLICATION LIST

Comments to the page above (4.4.1.1. Co-publications by department – publication list)

- Is this feature useful and easy to use?
- Is more explanation needed?
- Other comments

4.5. COLLABORATION REPORT OVERALL COMMENTS

Overall comments to the collaboration report

- Are there missing features/data elements? What could be added?
- Are more instructions needed? In case, what, how and where?
- Other comments

APPENDIX B: TEST GUIDE FOR SECOND TEST

Test of DTU Research Analytics Platform – Collaboration Module

Introduction

The purpose of the test is to evaluate the RAP's collaboration module in terms of functionality and usability. We recommend that you test the RAP in two steps:

1. Start by exploring the RAP on your own without reading the presentation of the RAP on the following pages. This step might include going to the collaboration module and the world map as well as looking into the data for a country and a university.

2. After browsing through the presentation of the RAP (pages 3-16), use the RAP to find the answers to the questions below "RAP Test Questions". You do not have to provide the answers themselves, we are more interested in understanding if the RAP enabled you to answer the questions. Once you have tried to answer the questions below, please share your feedback on page 2 "RAP Test Feedback".

RAP Test Questions

For the timespan 2014-2019:

3. Which country does **DTU** collaborate with the most?

4. Which partner does **DTU** collaborate with the most?

5. In which subject does **DTU** collaborate the most?

6. Which country does **DTU Aqua** collaborate with the most?

7. Which partner does **DTU Chemical Engineering** collaborate with the most?

8. In which subject does **DTU Mechanical Engineering** collaborate the most?

9. In Norway, which partner does **DTU** collaborate with the most?
   a) What is the normalised citation impact for DTU and the partner?
   b) What are the top three subjects of the partner?
   c) What are the top three subjects of the co-publications?
   d) Which DTU department collaborates the most with the partner?
   e) Which DTU researcher collaborates the most with the partner?

Link to the DTU RAP: http://rap.adm.dtu.dk/vivo

Please note that the DTU RAP works in Chrome and Firefox, but not in Internet Explorer.

RAP Test Feedback

- How would you describe your overall experience using the RAP?
Feedback:

- What did you like the most about using the RAP?
Feedback:

- What did you like the least?
Feedback:

- How easy or difficult was it to navigate?
Feedback:

- How easy or difficult was it to find the information you were looking for?
Feedback:

- Did you get the results you expected?
Feedback:

- Suggestions for improving the RAP?
Feedback:

- Any other comments?
Feedback:

# Presentation of DTU Research Analytics Platform – Collaboration module

Agenda

1. Introduction
2. Demonstration of the collaboration module
3. Demonstration of the collaboration report (eight sections)

1. Introduction
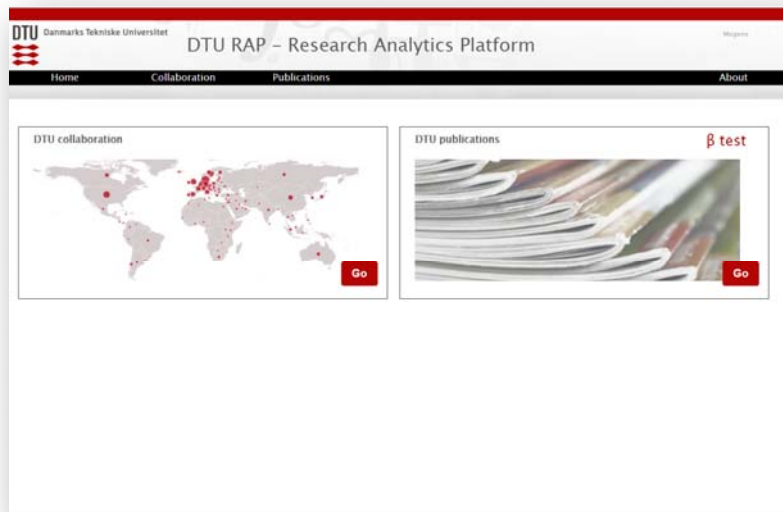
The DTU Research Analytics Platform (http://rap.adm.dtu.dk/) presents data and calculations from Web of Science and InCites in a fast and simple way, adapted to DTU needs and preferences. It is updated monthly – and, hopefully, easy to use. DTU RAP is open to everyone with a campus login.
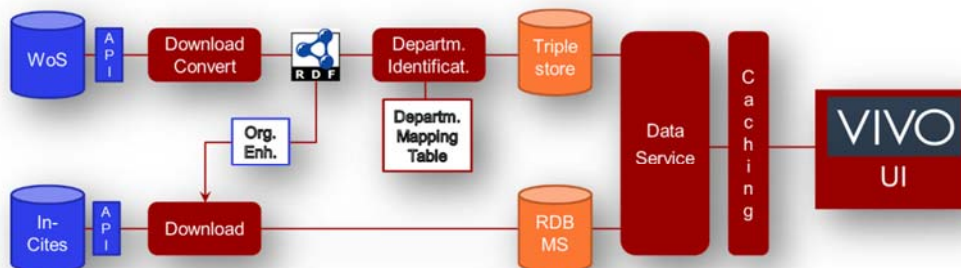
We employ two data processing pipelines, one for each of the external databases. General software framework and ontology comes from the VIVO project (Cornell, U Florida, Duke,

Stanford etc.). We have contributed open source code to handle the WoS/InCites data and produce the analytical reports. Data-wise, we continuously map the many variants of DTU department names (>2,500) to 30 current names (including Administration and Unknown). Development is part of the OPERA project, initially funded by DEFF now by the ministry - see also http://rap.adm.dtu.dk/vivo/aboutProject

**2. Demonstration of the collaboration module**

The final product of the Collaboration module is a detailed analytical report of the collaboration between DTU and a chosen partner organization – to view online and exploit the many hyperlinks going deep into certain aspects – or to download as an offline spreadsheet, which may be shared with those that cannot login due to data license conditions.

There are four ways to find and select a partner organization – and this exploration may provide useful insights by itself:

1. Exploring a world map – zoom and click
2. By list of countries – browse or search
3. By list of partner organizations – browse or search
4. By list of subjects – browse or search

Moreover, you may explore this for DTU overall or for a specific DTU department.

Let's look at the world map:
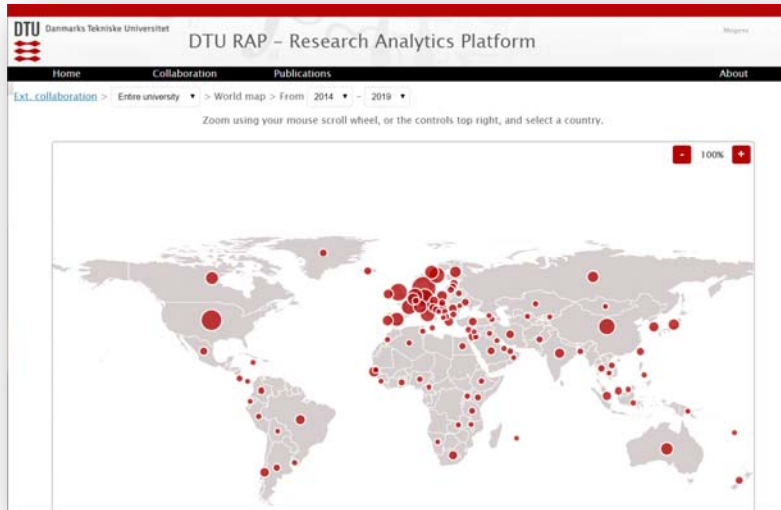
Note that by default we're looking at the entire university and the latest 5-6 years.

We can zoom in on – for example – Europe, and see that we have 2,203 co-publications with Germany during the set timespan.

When we change the timespan to 2007-2019, the map is updated and now we see 3,846 co-publications with Germany.

When we change the scope to Centre for Oil and Gas, the map is once again updated.

Similarly when we change the scope to DTU Aqua.

You could continue by clicking on a country dot, see the list of partners of that country, and select one of them for the full collaboration report.

Instead, let's take a look at the list of subjects – during the last 5-6 years

If we look at "Energy & Fuels". We see the partner organizations and the number of co-publications – from here we may request a full collaboration report for each one of them.

Instead, if we go back to the list of subjects, we may change the scope to DTU Aqua – and the list is updated to reflect the collaboration subjects of a single department:

Let's take a look at the list of partner organizations:

A very long list! - Currently 3,717 partners listed for the last 5-6 years.

Like with the other lists, we may filter (or search) the list to focus on a single or just a few organizations. If we type "tech", we shorten the list to collaboration partners with "tech" in their name:

We may also search for "KAIST"
→ reduce the list to a single line
→ and then request the **full collaboration report for KAIST**

0. Header and table of contents

DTU collaboration report for the timespan 2014 ⌄ – 2019 ⌄
Korea Advanced Institute of Science & Technology (KAIST), South Korea
Collaboration reports cover all DTU departments – for a breakdown by department see section 6

Contents:

1. Collaboration overview
2. Compare key output and impact indicators
3. Compare annual publication and co-publication output
4. Compare partner's top subjects with DTU and co-publications
5. Compare top collaboration subjects with partner and DTU subjects
6. Collaboration by DTU department
7. Collaboration by DTU researcher (top 20)
8. Collaboration by funder (top 20)
9. Notes and hints

The header displays the timespan of the report.

If you prefer another timespan – longer or shorter – simply use the drop downs, and a revised report is generated.

Often you will set a timespan matching a pre-cached report – and experience immediate response in spite of the high number of calculations needed.

In other cases, you'll have to wait half a minute or so – for the server to prepare the report.

From the table of contents, you may jump directly to a particular section of interest – for example section 6, if you're interested in the breakdown by department.

Let's take a look at the sections of the report, one by one:

1. Collaboration overview

Quick overview of the collaboration:
- How many co-publications year-by-year
- How many subject categories (out of 250 in total)?
- What are the most popular subject categories?

1. Collaboration overview

In total: 126 co–publications in 52 subject categories during timespan

Number of co–publications per year

Note: In Web of Science, the data for a particular publication year is not complete until the middle of the following year

Number of co–publications by top research subjects
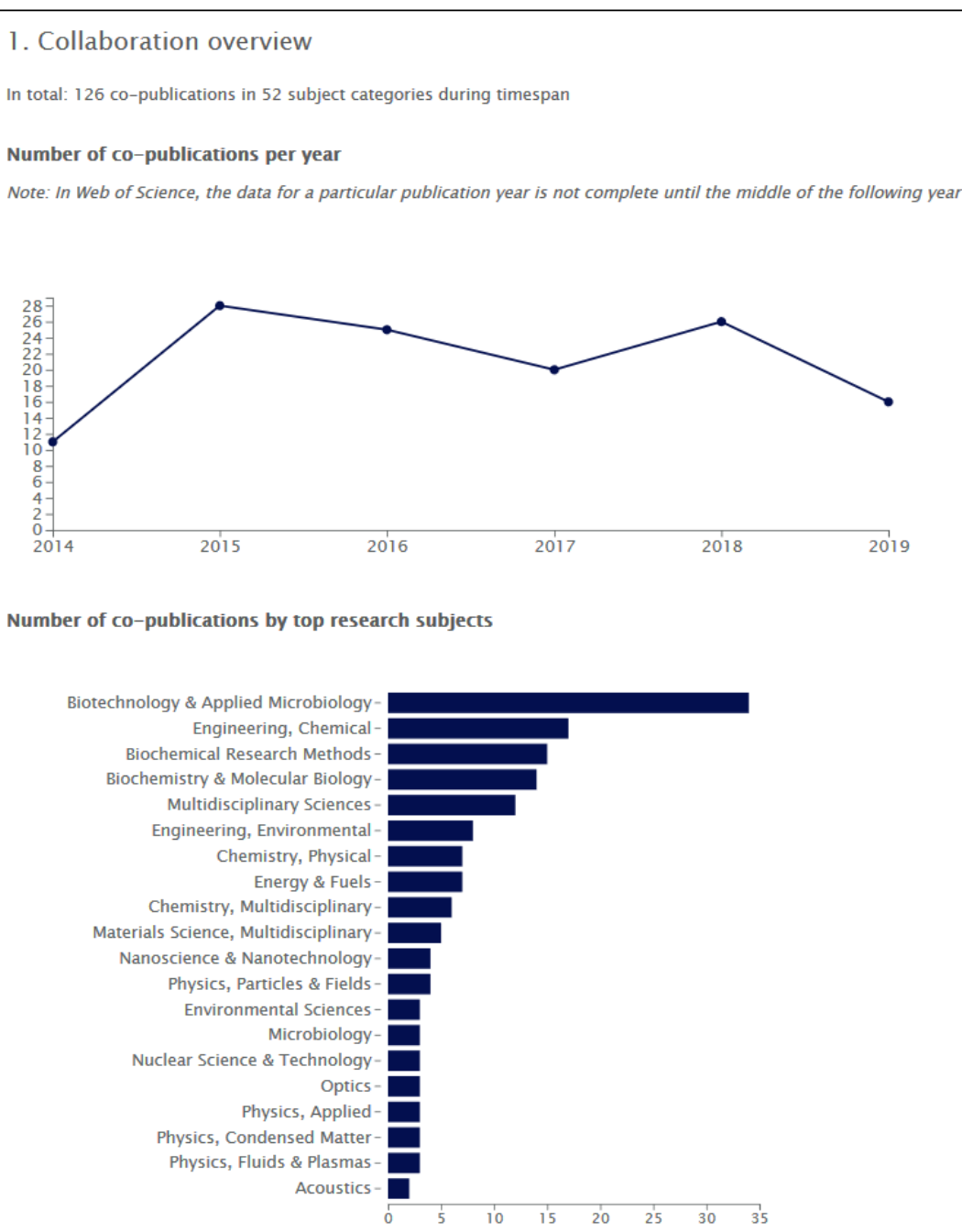
Let's reset the timespan to the full period 2007-2019 – and see how the overview changes:

1. Collaboration overview

In total: 152 co-publications in 62 subject categories during timespan

Number of co-publications per year

Note: In Web of Science, the data for a particular publication year is not complete until the middle of the following year
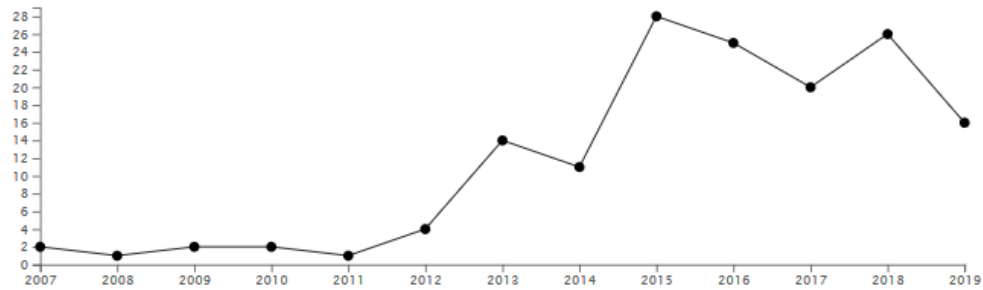
Number of co-publications by top research subjects
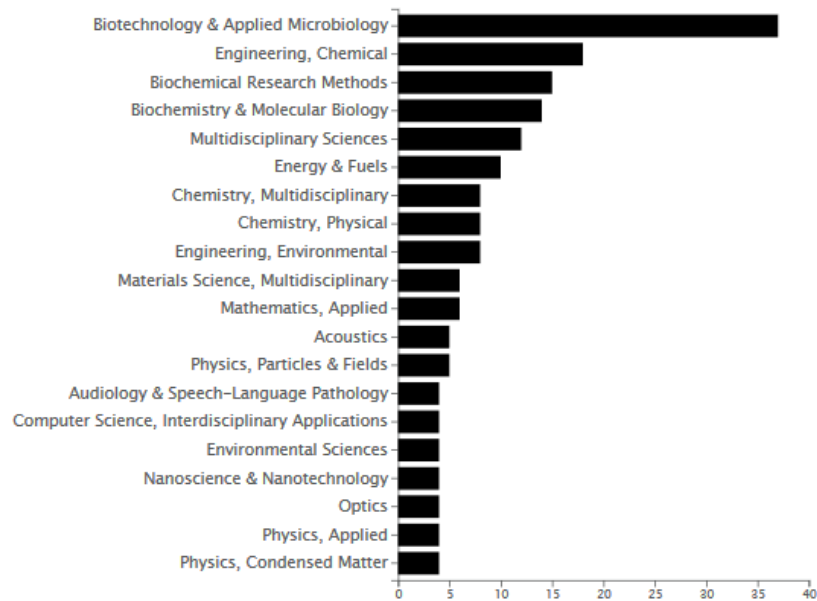
- Has the strategic partnership affected the collaboration output?

2. Compare key output and impact indicators

Compare DTU and the chosen partner in the chosen timespan:
- How many publications and citations?
- How are they doing wrt. citation impact – simple and normalized?
- How are they doing wrt. excellence – proportion of publications in top 10% and top 1% most cited?
- How much are they collaborating – internationally and with industry?

2. Compare key output and impact indicators

Indicator	Partner	DTU
Number of publications	39 716	41 165
Number of citations	564 042	804 466
Simple citation impact (citations / publication)	14.2	19.5
Normalised citation impact (global average 1.0) ❶	1.14	1.59
% of publications in top 10% most cited ❶	12.2%	17.8%
% of publications in top 1% most cited ❶	1.4%	2.6%
% of publications with industry collaboration	6.1%	7.0%
% of publications with international collaboration	24.9%	56.5%

3. Compare annual publication and co-publication output

Year by year:
- How many publications from the two universities and how many co-publications?

3. Compare the annual publication and co-publication output

Year	Partner pubs	DTU pubs	Co-pubs
2007	2 438	2 318	2
2008	2 544	2 237	1
2009	2 729	2 452	2
2010	2 960	2 637	2
2011	3 003	2 992	1
2012	3 107	3 057	4
2013	3 317	3 401	14
2014	3 497	3 705	11
2015	3 714	4 021	28
2016	3 845	4 205	25
2017	3 712	4 454	20
2018	3 625	4 153	26
2019	1 225	1 533	16

4. Compare partner's top subjects with DTU and co-publications

Top subjects of the partner, of DTU and of the resulting co-publications:

- Sort by partner to see the partner's top 20 subjects.
- And how they rank on the DTU side?
- Are we collaborating in the partner's top 20 subjects, or outside?

4. Compare partner's top subjects with DTU and co-publications

Partner's top 20 subjects	Partner		DTU		Co-pubs
	Pubs	Rank	Pubs	Rank	
Engineering, Electrical & Electronic	8 951	1	4 734	1	3
Materials Science, Multidisciplinary	5 856	2	3 366	3	6
Physics, Applied	4 778	3	3 419	2	4
Chemistry, Multidisciplinary	3 799	4	1 500	11	8
Nanoscience & Nanotechnology	3 315	5	1 600	10	4
Chemistry, Physical	3 256	6	2 301	6	8
Telecommunications	2 856	7	1 059	17	0
Optics	2 412	8	3 365	4	4
Computer Science, Information Systems	1 819	9	473	52	1
Physics, Condensed Matter	1 726	10	1 196	16	4
Computer Science, Artificial Intelligence	1 694	11	572	39	0
Computer Science, Theory & Methods	1 610	12	949	21	1
Engineering, Mechanical	1 467	13	1 484	12	1
Energy & Fuels	1 457	14	3 193	5	10
Biotechnology & Applied Microbiology	1 191	15	1 757	8	37
Biochemistry & Molecular Biology	1 125	16	1 230	15	14
Engineering, Chemical	1 040	17	1 698	9	18
Instruments & Instrumentation	1 022	18	660	32	2
Automation & Control Systems	1 016	19	446	55	2
Computer Science, Hardware & Architecture	958	20	338	65	0

5. Compare top collaboration subjects with partner and DTU subjects

Looking at the top 20 subjects of the co-publications:
- How do they match the top 20 of the partner?
- How do they match the top 20 of DTU?
- You may follow links to review the co-publications of each subject category

5. Compare top collaboration subjects with partner and DTU subjects

Collaboration top 20 subjects	Co-pubs	Partner rank	DTU rank
Biotechnology & Applied Microbiology	37	15	8
Engineering, Chemical	18	17	9
Biochemical Research Methods	15	33	23
Biochemistry & Molecular Biology	14	16	15
Multidisciplinary Sciences	12	90	106
Energy & Fuels	10	14	5
Chemistry, Multidisciplinary	8	4	11
Chemistry, Physical	8	6	6
Engineering, Environmental	8	59	14
Materials Science, Multidisciplinary	6	2	3
Mathematics, Applied	6	42	46
Acoustics	5	56	43
Physics, Particles & Fields	5	64	121
Audiology & Speech-Language Pathology	4	134	80
Computer Science, Interdisciplinary Applications	4	24	27
Environmental Sciences	4	49	7
Nanoscience & Nanotechnology	4	5	10
Optics	4	8	4
Physics, Applied			
Physics, Condensed			

Co-publications by category Biochemistry & Molecular Biology – DTU and Korea Advanced Institute of Science & Technology (KAIST)

14 total co-publications

The antiSMASH database version 2: a comprehensive resource on secondary metabolite biosynthetic gene clusters 2019-01-08

FULL TEXT VIA DOI: 10.1093/NAR/GKY1060   WEB OF SCIENCE: WOS:000462587400087
REFERENCES: 18 CITATIONS: 5

Systematic discovery of uncharacterized transcription factors in Escherichia coli K-12 MG1655 2018-11-16

FULL TEXT VIA DOI: 10.1093/NAR/GKY752   WEB OF SCIENCE: WOS:000456709700018
REFERENCES: 79 CITATIONS: 3

Systems assessment of transcriptional regulation on central carbon metabolism by Cra and CRP 2018-04-06

FULL TEXT VIA DOI: 10.1093/NAR/GKY069   WEB OF SCIENCE: WOS:000429009500020
REFERENCES: 61 CITATIONS: 7

The power of synthetic biology for bioproduction, remediation and pollution control: The UN's Sustainable Development Goals will inevitably require the application of molecular biology and biotechnology on a global scale 2018-04-01

6. Collaboration by DTU department

Listing all the DTU departments involved in the collaboration:
- How many co-publications for each department?
- Expand to see the departments involved on the partner side.
- Follow link to see a list of a particular department's co-publications:
  - Title of publications, involved researchers on DTU side as well as partner side.
  - Link to all details about a single publication and its citations.

6. Collaboration by DTU department

DTU department	Co-pubs	Partner departments
DTU Biosustain	63	Expand to show details
DTU Environment	18	Expand to show details
DTU Physics	16	Expand to show details
DTU Chemical E		
DTU Compute		
DTU Electrical E		
DTU Nanotech		
DTU Space		
DTU department		
DTU Bioenginee		
DTU Chemistry		
DTU Mechanica		
DTU Systems Biology	3	Expand to show details

DTU Physics	16	Collapse to hide details
	8	Dept Nucl & Quantum Engn
	3	Dept Chem
	3	Dept Chem & Biomol Engn
	2	Ctr Time Resolved Diffract
	1	Dept Nucl Quantum Engn
	1	Grad Sch Energy Environm Water & Sustainabil EEWS

Collaboration by department – DTU and Korea Advanced Institute of Science & Technology (KAIST)

3 co-publications for DTU Physics and Dept Chem, [Korea Advanced Institute of Science & Technology (KAIST)]

Atomistic characterization of the active-site solvation dynamics of a model photocatalyst 2016-11-28

FULL TEXT VIA DOI: 10.1038/ncomms13678   WEB OF SCIENCE: WOS:000388643800001

REFERENCES: 39 CITATIONS: 20

DTU Physics	Dept Chem
Kjaer, Kasper S.	Kim, Kyung
Nielsen, Martin M.	Ihee, Hyotch
van Driel, Tim B.	Kim, Jong G
Christensen, Morten	
Harlang, Tobias	
Haldrup, Kristoffer	

Filming the Birth of Molecules and Acco...

FULL TEXT VIA DOI: 10.1021/ja312513w

REFERENCES: 53 CITATIONS: 33

DTU Physics	Dept Chem
Moller, Klaus B.	Lee, Jae Hyuk
Petersen, Jakob	Ihee, Hyotcherl
	Kim, Jeongho

Atomistic characterization of the active-site solvation dynamics of a model photocatalyst

van Driel, TB (van Driel, Tim B.)[2, 1]   Kim, JG (Kim, Jong Goo)[9, 8]   Haldrup, K (Haldrup, Kristoffer)[1]
Kim, KH (Kim, Kyung Hwan)[9, 12, 8]   Ihee, H (Ihee, Hyotcherl)[9, 8]   Kim, J (Kim, Jeongho)[10]
Lemke, H (Lemke, Henrik)[13, 2]   Sun, Z (Sun, Zheng)[3]   Sundstrom, V (Sundstrom, Villy)[4]
Zhang, WK (Zhang, Wenkai)[14, 3]   Zhu, DL (Zhu, Diling)[2]   Kjaer, KS (Kjaer, Kasper S.)[4, 1, 3]
Moller, KB (Moller, Klaus B.)[5]   Nielsen, MM (Nielsen, Martin M.)[1]   Gaffney, KJ (Gaffney, Kelly J.)[3]
Hartsock, RW (Hartsock, Robert W.)[3]   Dohn, AO (Dohn, Asmus O.)[11, 5]   Harlang, T (Harlang, Tobias)[4, 1]
Chollet, M (Chollet, Matthieu)[2]   Christensen, M (Christensen, Morten)[1]   Gawelda, W (Gawelda, Wojciech)[7, 6]
Henriksen, NE (Henriksen, Niels E.)[5]

NATURE COMMUNICATIONS
Volume: 7   ISSN: 2041-1723   DOI: 10.1038/ncomms13678   Published: NOV 28 2016
Web of Science: WOS:000388643800001   References: 39   Citations: 20

Abstract
The interactions between the reactive excited state of molecular photocatalysts and surrounding solvent dictate reaction mechanisms and pathways, but are not readily accessible to conventional optical spectroscopic techniques. Here we report an investigation of the structural and solvation dynamics following excitation of a model photocatalytic molecular system [Ir-2(dimen)(4)](2+), where dimen is para-

7. Collaboration by DTU researcher (top 20)

Listing the 20 most active DTU researchers in this collaboration in this timespan:
- How many co-publications for each researcher?
- Expand to see the researchers involved on the partner side.
- Follow link to all the co-publications of a particular researcher.

7. Collaboration by DTU researcher (top 20)

DTU researcher	Co-pubs	Partner researcher
Lee, Sang Yup	34	Expand to show details
Weber, Tilmann	17	Expand to show details
Kildegaard, Helene Faustrup	15	Expand to show details
Kim, Hyun Uk	15	Expand to show details
Lee, Gyun Min	15	Expand to show details
Hwang, Yu-Hoon	14	Expand to show details
Gani, Rafiqul	11	Expand to show details
Andersen, Henrik Rasmus	10	Expand to show details
Palsson, Bernhard O.	10	Expand to show details
Blin, Kai	9	Expand to show details
Jacobsen, A. S.		
Leipold, Frank		
Naulin, Volker		
Nielsen, Anders Henry		
Rasmussen, Jens Juul		
Salewski, Mirko		
Thrysoe, Alexander S.		
Kol, Stefan		
Christensen, Ole Bossing		
Hansen, Henning Gram		

Palsson, Bernhard O.	10	Collapse to hide details
	6	Cho, Byung-Kwan
	3	Lee, Sang Yup
	2	Cho, Suhyung
	1	Cho, Yoo-Bok
	1	Hwang, Kyu-Sang
	1	Hwang, Soonkyu
	1	Kim, Hyun Uk
	1	Kim, Sun Chang
	1	Lee, Gyun Min
	1	Lee, Namil
	1	Lee, Yongjae
	1	Park, Jin Hyoung

8. Collaboration by funder (top 20)

Listing the 20 most used funders in this collaboration in this timespan. NB:

- Not all publications provide funding details.
- Funder names are not (yet) normalized, but Clarivate is working to achieve this soon.

8. Collaboration by funder (top 20)

Funder	Co-pubs
NNF Center for Biosustainability	28
Novo Nordisk Fonden	28
NOVO Nordisk Foundation	14
Ministry of Education, Science and Technology	9
EURATOM research and training programme	7
Ministry of Science, ICT and Future Planning (MSIP) through the National Research Foundation (NRF) of Korea	6
Basic Science Research Program through the National Research Foundation of Korea (NRF) – Ministry of Education	3
Biotechnology and Biological Sciences Research Council	3
Spanish MINECO	3
Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries from the Ministry of Science, ICT and Future Planning (MSIP) through the National Research Foundation (NRF) of Korea	3
Bio-Synergy Research Project of the Ministry of Science, ICT and Future Planning through the National Research Foundation	2
C1 Gas Refinery Program through the National Research Foundation of Korea (NRF) – Ministry of Science, ICT & Future Planning	2
EPSRC	2
EURATOM research and training programme 2014-2018	2
GRL	2
Global Frontier Program	2
IWT	2
Inha University Research Grant	2
Intelligent Synthetic Biology Center of Global Frontier Project – MEST, Republic of Korea	2
NIGMS NIH HHS	2

Download Excel

In the upper right corner of the collaboration report it is possible to click "Download Excel" to download the collaboration report for further analysis, formatting, print, etc.