

**Elsevier Research Intelligence** 

# 연구자를 위한 전략적인 의사 결정: SciVal 활용법



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Empowering Knowledge

# Agenda

### Introduction

Scopus? SciVal?

### **1. Basic Analysis**

- 1. Overview module
- 2. Benchmarking module

### 2. Advanced Analysis

- 1. Account 만들기
- 2. My SciVal settings
- 3. Researcher/ Research Team 분석하기
- 4. Publication Set 분석하기
- 5. My Research Area 분석하기

### 3. Collaboration Analysis

- 1. Current collaborations
- 2. Potential collaborations







# Scopus? SciVal?





Empowering Knowledge

### **Elsevier Research Intelligence portfolio**

#### What we offer



of global, relevant scientific research, with tools that track, analyze and visualize research.

### Mendeley

A free reference manager and academic social network that can help organize research, collaborate with others online, and discover the latest research, as well as other meaningful trends in global research activity.

ENABLE RESEARCH	CONDUCT RESEARCH	SHARE RESEARCH	
Develop Strategy	Search, Discovery,	Manage	
Identify/Recruit Researchers	Collaborate, Network	Data Velish, Disseminate	
Secure Funding	Experiment	Commercialize	
Establish Partnerships	Analyze, Synthesize	Promote	
Manage Facilities			

What we support

#### Who we support

- Research
   Institutions
- Funders
- · Policy makers
  - Provosts
  - Vice Chancellors Research
  - Research Administrators/ Development Professionals
  - Researchers
  - Research Managers
  - Department Heads
  - Librarians
  - Students
  - Communications Professionals
  - Technology
     Transfer Officers
  - Grant Managers
  - Legislators
  - Economic Development Officers

## SciVal: Scopus database를 활용한 Big data 분석

- Scopus는 전 세계에서 가장 큰 초록 및 인용 데이터베이스
  - **5000여 개 출판사**에서 제공하는
  - 22,283개의 peer-reviewed 타이틀 (53.3M 레코드) 및 30,000권의 도서 수록
  - **105개 국가**의 저널 등재 (40개 언어)
  - 과학, 기술, 의학 분야 뿐만 아니라 사회 과학,
     예술 인문학 관련 분야를 폭 넓게 다룸



#### JOURNALS

**22,283** peer-reviewed journals **373** trade journals

-Full metadata, abstracts
and cited references (pre-1996)
-2,800 fully Open Access titles
Going back to 1823
Funding data from acknowledgements

#### CONFERENCES

**17k** events **5.5M** records (10%)

Conf. expansion: 1,000 conferences 6,000 conf. events 400k conf. papers 5M citations

Mainly Engineering and Physical Sciences

#### BOOKS

- 421 book series
- 28K Volumes
- 925K items

**29,917** books - 311K items

Books expansion: 75K books by 2015 - Focus on Social Sciences and A&H

#### PATENTS

**24M** patents from 5 major patent offices

www.Scopus.com

Life Sciences 4,509

**Physical** 

**Sciences** 7,456

Health

6,834

Social

8,042

**Sciences** 

**Sciences** 

## **Scopus Coverage: Comparison with nearest peer**



Source: Web of Science Real Facts, Web of Science title list and Scopus' own data (Sep 2014)

# Scopus Quality: 유의미한 연구 업적 평가 자료로 활용



#### 조선일보·QS '2014 아시아 대학 평가'에서 상위권에 든 국내 대학들

국내 순위	대학	<b>아시아 순위</b> (괄호 안 작년순위)	국내 순위	대학	아시아 순위 (괄호 안 작년순위)
1	카이스트	2(6)	11	중앙대	68(71)
2	서울대	4(4)	11	부산대	68(64)
3	포스텍	9(7)	13	한국외대	73(75)
4	연세대	16(16)	14	서울시립대	81(83)
5	성균관대	17(21)	15	경북대	85(77)
6	고려대	18(19)	16	전북대	87(97)
7	한양대	29(36)	17	가톨릭대	91 (99)
8	경희대	37(35)	10	동국대	96(106)
9	이화여대	39(40)	18	인하대	96(85)
10	서강대	54(52)	20	전남대	101(108)

자료: 영국의 글로벌 대학 평가기관 QS	(Quacquarelli Symonds)
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제모	SCOPUS 전규노무 이전 기주 벼겨 아내				
	000 00 81122 28 712 28 29				
작성자	정종근	등록일	2013-01-24	조회수	1574

2013년 1월 1일부터 SCOPUS 정규논문 인정기준이 변경되어 KRI의 논문검증서비스가 다음과 같이 바뀌오니 업무에 참고하시기 바 랍니다.

- ▫정규논문으로 인정되는 SCOPUS의 Document Type(6종)
- : Article, Editorial, Erratum, Letter, Note, Review
- ▫정규논문으로 불인정되는 SCOPUS의 Document Type(4종)
- 🗄 Article-in Press, Conference paper, Conference Review, Short survey

※ 학술대회 논문은 "학술대회 논문실적으로 등록"

- ※ 연구실적으로 기 입력된 학술대회논문(2013년 이전 등록)은 정규 논문으로 인정
- ※ 2012년에 발표되어 SCOPUS에 올라와 있는 학술대회논문은 수기입력으로 자료를 입력하며, 논문검증이 되지 않는 자료라고해 서 어떠한 불이익은 없음

붙임 : Scopus 문서 분류 기준(2013.01.24)

Scopus – 대학별 연구자 연구업적 평가 source로 활용





# **1. Basic Analysis**



Empowering Knowledge

### www.SciVal.com

#### SciVal

Home	Overview	Benchmarking	Collaboration		
Welcome to SciV	al				
Overview		Benchmarkir	ng	Collaboration	
Owner         Addresses:         Companyors:         Measures           Addresses:         Andresses:         Andresses:         Andresses:           Addresses:         Andresses:         Andresses:         Andresses:	lagert Denos.+ Charrey of Admission 4.9 Pagert +	150,000 100,000 50,000 0 2005 2006 2007	7 2008 2009 2010 2011 2012 2013	Berner States	A CAL
Get a high-level overview of t performance of your instituti institutions, Countries and G Researchers.	he research Ion, other roups of	Compare and be to other institution Groups of Resear metrics.	nchmark your Institution ons, Researchers and rchers using a variety of	Explore the collaboration network o both your institution and other institutions.	f
Overvlew	>	Benchmarking	>	Collaboration	>

>

>

#### **Research Areas**

A Research Area is a field of research defined by you. It can represent a strategic priority, an emerging area of science, or any other topic of interest. Define a new Research Area Manage my Research Areas

#### Quick Guide to SciVal

Get a quick overview of SciVal, how you can use it and how it can help you. View the SciVal Quick Reference Guide



#### www.SciVal.com

#### 1. Overview



### 220개 국가, 4600개 기관의 연구 성과 분석

- Overall research performance... with pre-defined Institutions, countries, research areas on publications, citations, authors, collaboration & competencies
   Customized Performance Analysis with...
- 2. Benchmarking



### 15개 매트릭스를 이용한 보다 다양한 분석 (Snowball matrix 활용 가능) 💈

Academic-Corporate Collaboration

Researchers and groups, research areas, etc.

- Academic-Corporate Collaboration
   Impact
- Citation Count
- Citations per Publication
- Cited Publications
- Collaboration
- Collaboration Impact

- Field-Weighted Citation Impact
- h-indices
- Journal Category Count
- Journal Count
- Number of Citing Countries
- Outputs in Top Percentiles
- Publications in Top Journal Percentiles
- Scholarly Output

### 3. Collaboration



### 기존 연구 협력 결과 분석 <mark>및</mark> 미래의 연구 협력 파트너 검색

- Analysis for current collaboration results
- Information for potential collaboration with...
  - International and local institutions in each research area
  - > Top 100 authors of each selected institution



- 220개 국가, 4600개 기관 및 개별 연구자, 연구팀, 연구 주제에 대한 분석 제공
  - 원하는 기간 (3년/5년)과 연구 주제 분야를 선별해서 분석 가능
  - 간편하게 PDF로 다운 받아 공유 가능

Pusan Na	ational University
📧 South Korea	More details on this Institution
Source: Scopus da	lata up to 31 Oct 2014 2009 to 2013 👻 no filter selected 🔹
Summary	Publications Citations Authors Collaboration Competencies
Overall resea	arch performance
Publications	Citations Authors Field-Weighted Citation Impact Citations per Publication 60,454 7,143 1.00 5.4
L View list of pub	blications Other (8.8%) Pharmacology, Toxicology (2.8%) Medicine (13.1%) Medicine (13.1%) Definition of the state of the stat
Bio	iochemistry, Genetics an (8.4%) Agricultural and Biologic (2.7%)
	Earth and Planetary Sciences (2.2%) Environmental Science (2.1%) Engineering (14.4%)



- 최근 중요성이 부각되고 있는 Snowball metrics의 주요 항목들도 함께 표시
  - Output in Top Percentiles: 피인용수 기준 세계 상위 (10%)에 들어가는 논문 비율
  - Publications in Top Journal Percentiles: 상위 (10%) 저널에 발표한 논문 비율
  - International Collaboration: 해외 저자와 공동 출판한 논문 비율
  - Academic-Corporate Collaboration: 산학 협력으로 출판한 논문 비율





 각 Tab 별로 Publications, Citations, Authors, Collaboration, Competencies와 관련된 보다 구체적인 분석 결과를 확인할 수 있음





- My Research Area를 설정해 두면 각 내용과 관련된 분석이 함께 제공됨
  - 예를 들어, 각 키워드 및 연구분야 별 선택한 기관의 출판물 목록과 주요 저자 등을 확인할 수 있음

Pusan N	ational Ur	niversity	n				
Source: Scopus o	data up to 31 Oct 2	014 2009 to	2013 🔻	no filter selected		•	
Summary	Publications	Citations	Authors	Collaboration	Competencies		
Overall	by Research Are	ea by Jour	nal Category	by journal			
You ha     Manag	ve defined 3 Resea e your Research Ar	rch Areas eas   Define	a new Resear	ch Area			
Publications	at Pusan Nat	ional Unive	rsity, by Re	esearch Area		Export 🔻	Shortcuts 🔻
Below is an over	view of the publica	tion output at P	usan National	University in your 3 l	Research Areas		
Research Are	a	P	ublications	Citations	Authors	Most published authors	
🐯 Marine &	Ocean		144 🔺	545	138 🔺	Paik, J.K., Kim, B.J., Seo, J.K.	
🔀 Chinese m	nedicine		52 🔺	314	89 🔺	Shin, BC., Jung, J.H., Hwang, D.Y.	
🔀 dental & t	eeth		43 🔺	624	60 🔺	Kim, G.C., Kim, HC., Park, SB.	



# 연구분야 별 논문 발표 건수 및 FWCI를 한 눈에 비교할 수 있음 전체 연구 분야 별, 특정 연구 분야의 세부 카테고리 별 분석 결과 확인 가능





- 해당 분야의 논문이 주로 어떤 저널을 통해 발표되고 있는지 확인 가능
- 특정 연구 분야를 선택하거나, 직접 설정한 주제분야의 주요 저널 확인

Pusan National University					
South Korea   More details on this Institution					
Source: Scopus data up to 31 Oct 2014 2009 to 2013	▼ no filter selected ▼				
Summary         Publications         Citations         Auth           Overall         by Research Area         by Journal Cate	nors Collaboration Competencies Source: Scopus data up to 06 Nov 2014 2009 to 2013   Materials Science	ce	·		
Publications at Pusan National University.	Summary Publications Citations Authors Collaboration	Competencies			
	Overall by Research Area by Journal Category by journal				
Journal	Public days of Proceeding and the foreign for the foreign of	-			
Bulletin of the Korean Chemical Society	Publications at Pusan National University, by journal				Export 🔻
Journal of the Korean Physical Society	lournal	Publications	Citations	Authors	SNIP 🔻
Journal of Mechanical Science and Technology	Journal of Nanoscience and Nanotechnology	117 🔺	280	212 🔺	0.557
Journal of Nanoscience and Nanotechnology	Current Applied Physics	87 🔻	553	181 🔻	1.326
International Journal of Precision Engineering and Manu	Journal of Korean Institute of Metals and Materials	71 🔺	134	121 🔺	0.985
Current Applied Physics	Molecular Crystals and Liquid Crystals	66 🔻	58	90 🔻	0.375
Biochemical and Biophysical Research Communications	Transactions of Nonferrous Metals Society of China	63 🔻	152	82 🔻	1.671
Journal of Korean Institute of Metals and Materials	Macromolecular Research	58 🔻	299	113 💌	0.766
Journal of Korean Medical Science	Thin Solid Films	43 🔺	163	103 🔺	1.273
Molecular Crystals and Liquid Crystals	Journal of Ceramic Processing Research	43 🔻	59	89 🔻	0.482
	Synthetic Metals	41 🔺	230	67 🔺	0.988
	Korean Journal of Materials Research	36 🔺	12	82 🔺	0.161



- Citation trend를 각 항목 별, 연도 별로 확인 가능
- Citation count가 연도와 반비례하는 경향이 있는데 반해, FWCI를 이용하면 각 연도 별 Citation 지수가 상승하고 있는지, 하락하고 있는지 판단할 수 있음





- 해당 분야의 논문 발표가 가장 활발한 100명의 저자 리스트 확인 가능
- 직접 설정한 주제 분야를 선택하는 경우, 전 세계, Asia Pacific, 한국, 기관별 관련 저자 리스트를 출력할 수 있음

Source: Scopu	s data up to 06 Nov 2	.014 2	009 to 2013 🔻	Materials Science		•	-	
Summary	Publications	Citatior	ns Authors	Collaboration	Competencies			
Authors			Kim, K.H. Scopus author ID: 74	09324935   View in Sco	bus			X
Top 100 autho Note that som	rs, by number of pub e authors may no lon	lications ger be a	Publications 337	Citations <b>2,976</b>		Citations per Publication <b>8.8</b>	h-index 27	
Name 1. Ha, C.	S.	_	Publications by		Publications by Journal Category		Publications by Journal	
2. Kim, k 3. Jin, S	.H. H.							
4. Kim, E 5. Suh, F	. <b>к</b> . I.							
<ol> <li>Lee, H</li> <li>Park, I</li> </ol>			<ul><li>Pusan Nation</li><li>Seoul Nation</li></ul>	nal University (66.0%) nal University (7.9%)	<ul> <li>Materials Science</li> <li>Physics and Ast</li> </ul>	ce (29.9%) ronomy (26.6%)	Surface and Coatings Technolo Current Applied Physics (8.1%)	ogy (16.1%)
8. Kim, Y 9. Kim, I.			Cheongju U Other (20.2%)	niversity (5.9%)	<ul><li>Engineering (12</li><li>Other (31.1%)</li></ul>	.4%)	<ul> <li>Transactions of Nonferrous Me Society of China (6.7%)</li> <li>Other (69.1%)</li> </ul>	atals



- 공동 연구 관련 하여 보다 자세한 정보도 쉽게 산출할 수 있음
  - 일반적으로 단일 출판, 기관 내 공동 출판, 국내 공동 출판, 국제 출판 순으로, 학계 내 공동 출판보다 산학 협력을 통한 공동 출판의 FWCI가 높아지는 경향

University, by amount of inter	national, natio	nal and institutiona	l collaboration		
c		Publications	Citations	Citations per Publication	Field-Weighted Citation Impact
ernational collaboration	23.9%	2,681	23,145	8.6	1.44
າly national collaboration	37.1%	4,164	21,797	5.2	0.93
ly institutional llaboration	37.0%	4,158	14,934	3.6	0.81
ngle authorship (no llaboration)	2.1%	233	578	2.5	0.71
	ernational collaboration ly national collaboration ly institutional llaboration ngle authorship (no llaboration)	ernational collaboration 23.9% Ily national collaboration 37.1% Ily institutional Ilaboration 37.0% Ilaboration 2.1%	Publications Publications ernational collaboration 23.9% 2,681 nly national collaboration 37.1% 4,164 nly institutional llaboration 37.0% 4,158 ngle authorship (no 2.1% 233	Publications       Citations         ernational collaboration       23.9%       2,681       23,145         Ily national collaboration       37.1%       4,164       21,797         Ily institutional llaboration       37.0%       4,158       14,934         Ingle authorship (no llaboration)       2.1%       233       578	CitationsPublicationsCitationsPublicationernational collaboration23.9%2,68123,1458.6Ily national collaboration37.1%4,16421,7975.2Ily institutional llaboration37.0%4,15814,9343.6ngle authorship (no llaboration)2.1%2335782.5

Shortcuts -

Publications at Pusan National University with both academic and corporate author affiliations

Metric		Publications	Citations	Citations per Publication	Field Citati	-Weighted on Impact
Academic-corporate collaboration	2.5%	281	1,742	6.2	1	1.18
No academic-corporate collaboration	97.5%	10,955	58,712	5.4		1.00



- SciVal의 기본 세팅은 Scopus 분류 기준인 ASJC journal classification 적용
  - 전체 논문에 대한 통합 분석 이외에도 필요에 따라 다음의 27개 대주제분야 및 300여 개의 소주제분야를 손쉽게 선택 가능
- 최근 update를 통해 다음의 journal classification이 새로이 추가됨
  - Fields of Research (FoR) 호주 연구 위원회 사용
  - Field of Science and Technology (FOS) Classification OCED 사용
  - Units of Assessment (UoA) 영국의 REF 2014 exercise에서 사용

### 27개 대주제 분야 (ASJC – Scopus 기준)

- Agricultural and Biological Sciences
- Arts and Humanities
- Biochemistry, Genetics and Molecular Biology
- Business, Management and Accounting
- Chemical Engineering
- Chemistry
- Computer Science
- Decision Sciences
- Earth and Planetary Sciences
- Economics, Econometrics and Finance
- Energy
- Engineering
- Environmental Science

- Immunology and Microbiology
- Materials Science
- Mathematics
- Medicine
- Neuroscience
- Nursing
- Pharmacology, Toxicology and Pharmaceutics
- Physics and Astronomy
- Psychology
- Social Sciences
- Veterinary
- Dentistry
- Health Professions



#### • Competency 분석은 동시 인용 분석 기법을 통해 기관의 고유 역량을 정의함

 전 세계에서 발표되는 논문을 다양한 세부 연구 분야로 클러스터링 하고 (동일한 reference를 가지고 있는 논문은 동일한 연구 주제를 다룬다고 판단) 각 연구 분야 클러스터 중 개별 기관이 선도하고 있는 분야를 선별하여 고유 competency로 정의

Pusai	n National University			
📧 South	Korea   More details on this Institution			
Source: So	copus data up to 31 Oct 2014 2009 to 2013 💌 no filter selected	Ψ		
Summa	ary Publications Citations Authors Collaboration Competencies			
Brow	vse competencies Search for competencies			
Browse	competencies		Export • S	hortcuts
Competen	cies of Pusan National University in 2013 🔻 based on an analysis of publications over the	period 2009-2013		
Tabl	e Ø Circle 🖽 Matrix		Filter competen	ncies by
ID Tabl	e ② Circle III Matrix Keywords	Most published authors	Filter competen Publications	ncies by Citatior
ID DC #1	e ② Circle I Matrix Keywords Mobile robots; Robots; Navigation	Most published authors Lee J., Park J., Lee M.	Filter competen Publications 46 •	ncies by Citatior 6
ID DC #1 DC #2	Image: Circle     Image: Matrix       Keywords     Mobile robots; Robots; Navigation       Gene Expression; Genes; Real-Time Polymerase Chain Reaction	Most published authors Lee J., Park J., Lee M. Kim H., Park S., Kim Y.	Filter competen Publications 46 • 31 •	Citation 6
ID DC #1 DC #2 EC #3	Image: Circle       Image: Matrix         Keywords       Mobile robots; Robots; Navigation         Gene Expression; Genes; Real-Time Polymerase Chain Reaction       Solar cells; Photoelectrochemical cells; Dyes	Most published authors Lee J., Park J., Lee M. Kim H., Park S., Kim Y. Lee D., Cho C., Jung O.	Filter competen Publications 46 • 31 • 25 •	Citation 6 5
ID DC #1 DC #2 EC #3 DC #4	e ② Circle I Matrix Keywords Mobile robots; Robots; Navigation Gene Expression; Genes; Real-Time Polymerase Chain Reaction Solar cells; Photoelectrochemical cells; Dyes Fluorodeoxyglucose F18; Positron-Emission Tomography; Positron-Emission Tomography and Computed Tomography	Most published authors Lee J., Park J., Lee M. Kim H., Park S., Kim Y. Lee D., Cho C., Jung O.	Filter competen Publications 46 * 31 * 25 • 21 •	Citation 6 5 13 13
ID IC #1 IC #2 IC #2 IC #3 IC #4 IC #5	Image:	Most published authors Lee J., Park J., Lee M. Kim H., Park S., Kim Y. Lee D., Cho C., Jung O. Kim S., Kim I., Kim B. Kim K., Yoon T., Kim J.	Filter competent Publications 46 • 31 • 25 • 21 • 77 •	Citation 6 5 13 13 17
ID ID DC #1 DC #2 EC #3 DC #4 DC #5 DC #6	Image: Circle       Image: Matrix         Keywords       Mobile robots; Robots; Navigation         Gene Expression; Genes; Real-Time Polymerase Chain Reaction       Solar cells; Photoelectrochemical cells; Dyes         Fluorodeoxyglucose F18; Positron-Emission Tomography; Positron-Emission Tomography and Computed Tomography       Liquid crystals; Liquid crystal displays; Alignment         Polishing; Chemical mechanical polishing; Abrasives       Polishing; Chemical mechanical polishing; Abrasives	Most published authors Lee J., Park J., Lee M. Kim H., Park S., Kim Y. Lee D., Cho C., Jung O. Kim S., Kim I., Kim B. Kim K., Yoon T., Kim J. Jeong H., Lee H., Lee Y.	Filter competen Publications 46 * 31 * 25 • 21 • 77 * 26 •	Citation 6 5 13 13 17 5
ID C #1 DC #2 EC #3 DC #4 DC #5 DC #6 DC #7	Image: Circle       Image: Matrix         Keywords       Mobile robots; Robots; Navigation         Gene Expression; Genes; Real-Time Polymerase Chain Reaction       Solar cells; Photoelectrochemical cells; Dyes         Fluorodeoxyglucose F18; Positron-Emission Tomography; Positron-Emission Tomography and Computed Tomography       Eliquid crystal displays; Alignment         Polishing; Chemical mechanical polishing; Abrasives       Radio frequency identification (RFID); Algorithms; Radio navigation	Most published authors Lee J., Park J., Lee M. Kim H., Park S., Kim Y. Lee D., Cho C., Jung O. Kim S., Kim I., Kim B. Kim K., Yoon T., Kim J. Jeong H., Lee H., Lee Y. Yoo Y., Gou H., Hong B.	Filter competen Publications 46 • 31 • 25 • 21 • 77 • 26 • 24 •	Citation Citation 5 13 13 13 17 5 4
ID Tabl DC #1 DC #2 EC #3 DC #4 DC #5 DC #5 DC #6 DC #7 EC #8	Image: Circle       Image: Matrix         Keywords       Mobile robots; Robots; Navigation         Gene Expression; Genes; Real-Time Polymerase Chain Reaction       Solar cells; Photoelectrochemical cells; Dyes         Fluorodeoxyglucose F18; Positron-Emission Tomography; Positron-Emission Tomography and Computed Tomography       Liquid crystals; Liquid crystal displays; Alignment         Polishing; Chemical mechanical polishing; Abrasives       Radio frequency identification (RFID); Algorithms; Radio navigation         Lymphoma; Lymphoma, Non-Hodgkin; Lymphoma, Large B-Cell, Diffuse       Solar cells; Diffuse	Most published authors Lee J., Park J., Lee M. Kim H., Park S., Kim Y. Lee D., Cho C., Jung O. Kim S., Kim I., Kim B. Kim K., Yoon T., Kim J. Jeong H., Lee H., Lee Y. Yoo Y., Gou H., Hong B. Cho K., Song M., Chung J.	Filter competen Publications 46 * 31 * 25 • 21 • 77 * 26 • 24 * 12 •	Citation 6 5 13 13 13 17 5 4 2

# SciVal





- Overview module에서는 분석 대상을 고르면 일련의 분석 결과가 자동 도출되는 반면, Benchmarking module에서는 분석자의 필요에 맞춘 커스텀 분석 제공
  - 다음과 같은 15개의 매트릭스를 3개 사분면으로 조합하여 분석할 수 있으며, 각 매트릭스 내에서도 세부 옵션 조정이 가능함
  - 예를 들어, Scholarly Output 관련 분석 시 articles, reviews, conference papers를 구분할 수 있음

	15개 매트릭스						
•	Academic-Corporate Collaboration	<ul> <li>Publications with both academic and corporate affiliations.</li> <li>산학 협력을 통해 출판된 논문</li> </ul>					
•	Academic-Corporate Collaboration Impact	<ul> <li>Citations per publication received by those publications with and without academic-corporate collaboration.</li> <li>산학 협력을 통해 발표된 논문과 비 산학 협력 논문의 논문 당 피인용 횟수</li> </ul>					
•	Citation Count	<ul> <li>Total citations received by publications of the selected entities.</li> <li>해당 기관의 이름으로 발표된 논문이 피인용 된 전체 횟수</li> </ul>					
•	Citations per Publication	<ul> <li>The average number of citations received per publication.</li> <li>논문 당 피인용 횟수의 평균</li> </ul>					
•	Cited Publications	<ul> <li>Publications that have received at least one citation.</li> <li>최소 1회 이상 피인용 된 논문</li> </ul>					
•	Collaboration	<ul> <li>The extent of international, national and institutional co-authorship.</li> <li>국제, 국내, 기관 내 저자가 발표한 공동 연구 논문</li> </ul>					
•	Collaboration Impact	<ul> <li>The average number of citations received by publications that have international, national or institutional co-authorship.</li> <li>국제, 국내, 기관 내 저자가 발표한 공동 연구 논문의 피인용 횟수 평균</li> </ul>					

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	15개 매트릭스
Field-Weighted     Citation Impact	<ul> <li>The ratio of citations received relative to the expected world average for the subject field, publication type and publication year.</li> <li>해당 연구 분야, 논문 타입, 발표 연도에 따른 세계 평균 대비 피인용 비율</li> </ul>
• h-indices	<ul> <li>A measure of both the productivity and publication impact of an entity, based on the number of publications as well as the number of citations they have received. g-index emphasizes the most highly cited publications. m-index is h-index per year.</li> <li>연구의 생산성과 효과를 함께 측정하기 위한 지수로, 발표한 논문 개수와 피인용 횟수를 모두 고려함. g-index는 가장 많이 피인용된 논문을 강조하고, m-index는 h-index를 연 도로 나눈 값을 의미함</li> </ul>
<ul> <li>Journal Category Count</li> </ul>	<ul> <li>The number of Journal Categories in which a selected entity's publications have appeared.</li> <li>해당 기관의 논문이 해당하는 저널 카테고리 (연구 분야) 수</li> </ul>
Journal Count	<ul> <li>The number of journals in which a selected entity's publications have appeared.</li> <li>해당 기관의 논문이 발표된 논문 수</li> </ul>
Number of Citing Countries	<ul> <li>The number of distinct Countries represented by the publications citing a selected entity.</li> <li>해당 논문을 인용한 국가 수</li> </ul>
Outputs in Top     Percentiles	<ul> <li>The number of publications of a selected entity that are highly cited, having reached a particular threshold of citations received.</li> <li>일정 수준 이상의 피인용 횟수에 도달한 논문 수</li> </ul>
Publications in Top Journal Percentiles	<ul> <li>The number of publications of a selected entity that have been published in the world's top journals.</li> <li>세계 상위 저널에 발표된 논문 수</li> </ul>
Scholarly Output	<ul> <li>The number of publications of a selected entity.</li> <li>특정 기관에서 발표한 논문 수</li> </ul>



 Benchmarking module에서는 다양한 매트릭스를 활용한 분석 이외에도, 특정 시점의 연구 성과 혹은 특정 기간 동안의 연구 트랜드 변화를 관찰할 수 있음





• 조합에 따라 3개의 매트릭스를 한 개 그래프 안에서 분석할 수 있음



Daegu University



 분석 결과는 테이블 형태로도 출력이 가능하며, 이 형태는 구체적인 수치 확인 및 비교 시 보다 유용하게 쓰일 수 있음

	o 2013 ▼ no filter selected	Ţ	
Entity ±	Field-Weighted Citation Impact 후	Publications in Top 10 Journal Percentiles (%)	Scholarly Output
Pohang University of Science and Technology	1.55	32.9	9,153
Korea University	1.20	21.5	20,058
<ul> <li>Kyungpook National University</li> </ul>	1.10	15.2	11,044
Gyeongsang National University	1.06	13.7	5,606
Cheju National University	1.02	9.8	2,936
Pusan National University	1.00	15.7	11,236
Daegu University	0.95	12.3	1,328
Chungbuk National University	0.90	9.5 13.9 10.5	5,510
Chungnam National University	0.90		8,673
Wonkwang University	0.87		2,115
Inje University	0.82	11.5	4,720
ce: Scopus data up to 06 Nov 2014 2009 to 2013	Materials Science     Field-Weighted Citation     Impact ₹	Publications in Top 10 Journal Percentiles (%)	Scholarly Out;
te: Scopus data up to 06 Nov 2014 2009 to 2013	<ul> <li>Materials Science</li> <li>Field-Weighted Citation Impact ▼</li> <li>1.94</li> </ul>	Publications in Top 10 Journal Percentiles (%) 30.2	Scholarly Outp 3,1
te: Scopus data up to 06 Nov 2014 2009 to 2013 dty ≜ Pohang University of Science and Technology Cheju National University	▼ Materials Science Field-Weighted Citation Impact ▼ 1.94 1.78	Publications in Top 10 Journal Percentiles (%) 30.2 14.2	Scholarly Outs 3,
te: Scopus data up to 06 Nov 2014 2009 to 2013 tity ▲ Pohang University of Science and Technology Cheju National University Korea University	▼ Materials Science Field-Weighted Citation Impact ▼ 1.94 1.78 1.52	Publications in Top 10 Journal Percentiles (%) 30.2 14.2 20.3	Scholarly Outs 3, 3,
te: Scopus data up to 06 Nov 2014 2009 to 2013 dty ▲ Pohang University of Science and Technology Cheju National University Korea University Pusan National University	▼ Materials Science Field-Weighted Citation Impact ₹ 1.94 1.78 1.52 1.11	Publications in Top 10 Journal Percentiles (%) 30.2 14.2 20.3 14.2	Scholarly Outp 3, 3, 3, 2,
ce: Scopus data up to 06 Nov 2014 2009 to 2013 dty ▲ Pohang University of Science and Technology Cheju National University Korea University Pusan National University Gyeongsang National University	▼ Materials Science Field-Weighted Citation Impact ₹ 1.94 1.78 1.52 1.11 1.10	Publications in Top 10 Journal Percentiles (%) 30.2 14.2 20.3 14.2 18.5	Scholarly Outp 3, 3, 3, 2,
te: Scopus data up to 06 Nov 2014 2009 to 2013 ity = Pohang University of Science and Technology Cheju National University Korea University Pusan National University Gyeongsang National University Inje University	▼ Materials Science Field-Weighted Citation Impact ₹ 1.94 1.78 1.52 1.11 1.10 1.08	Publications in Top 10 Journal Percentiles (%) 30.2 14.2 20.3 14.2 18.5 8.3	Scholarly Outp 3, 3, 3, 2, 8
te: Scopus data up to 06 Nov 2014 2009 to 2013 ity ▲ Pohang University of Science and Technology Cheju National University Korea University Pusan National University Gyeongsang National University Inje University Chungnam National University	▼ Materials Science Field-Weighted Citation Impact ₹ 1.94 1.78 1.52 1.11 1.10 1.08 1.05	Publications in Top 10     Journal Percentiles (%)     30.2     14.2     20.3     14.2     18.5     8.3     15.3	Scholarly Out; 3, 3, 2, 4 1,
te: Scopus data up to 06 Nov 2014 2009 to 2013 2009 to 2014 2009 to	▼ Materials Science Field-Weighted Citation Impact ₹ 1.94 1.78 1.52 1.11 1.10 1.08 1.05 1.01	Publications in Top 10 Journal Percentiles (%) 30.2 14.2 20.3 14.2 18.5 8.3 15.3 5.5	Scholarly Out; 3,1 3,2 2,1 8 3 1,5 5 1,5 5 1,5 5 5 5 5 5 5 5 5 5 5 5 5
ce: Scopus data up to 06 Nov 2014 2009 to 2013 tity  Pohang University of Science and Technology Cheju National University Korea University Pusan National University Gyeongsang National University Inje University Chungnam National University Chungbuk National University Kyungpook National University	▼ Materials Science Field-Weighted Citation Impact ₹ 1.94 1.78 1.52 1.11 1.10 1.08 1.05 1.01 1.00	<ul> <li>Publications in Top 10 Journal Percentiles (%)</li> <li>30.2</li> <li>14.2</li> <li>20.3</li> <li>14.2</li> <li>18.5</li> <li>8.3</li> <li>15.3</li> <li>5.5</li> <li>13.7</li> </ul>	Scholarly Out; 3,1 3,2 2,1 8 3 1,5 1,6 1,6

0.83

11.2

170





# 2. Advanced Analysis



Empowering Knowledge

# 1. Account 만들기



- SciVal의 다양한 기능을 가장 잘 활용하기 위해서는 개인 계정을 만들어야 함
  - 다음 주소에서 "Register Now"를 선택: https://scival.com/customer/authenticate/loginfull
  - 이름, 이메일 주소, 비밀번호를 입력하는 것만으로 간단히 계정 생성 가능
  - 단, 기관 소속 이용자임을 증명하기 위해 기관 이메일 주소를 이용해야 함

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### 2. My SciVal settings



- My SciVal 메뉴를 통해서 분석자의 필요에 의한 다양한 분석 단위를 생성할 수 있음
  - Institutions and Groups: 개별 연구 기관 혹은 다양한 연구 기관을 그룹핑
  - Researchers and Groups: 개별 연구자 혹은 연구팀을 그룹핑
  - Publication Sets: 특정 연구자(들)의 출판물을 등록하거나 DOI, PMID, EID로 출판물 리스트를 Import 해서 분석
  - Research Areas: 연구 키워드, 연구 기관, 국가, 연구 분야, 저널, competency를 이용해 고유의 분석 단위 생성

SciVal					Yoon Hee Kang▼ Help▼
Home	Overview	Benchmarking	Collaboration		My SciVal
My SciVal					
🏛 Institutions and Groups		Institutions and Groups			
Researchers and Groups		Type to filter <b>Q</b> All <b>1</b>	All entities you can use in SciVal	▼ All tags ▼	
Publication Sets		Add to entity selection panel	Add tags		Define a new entity 🔻
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		A-STAR			
		Aalborg University			
		Aalto University			
		AAU - Association of Americ	an Universities		

### 2. My SciVal settings



X

- 이렇게 생성한 분석 단위들은 추후 수정 및 동일 기관 내 다른 user와 공유 가능
  - 해당 definition 위에 mouse over 하면 나타나는 우측 메뉴 중 🖆 표시를 클릭한 후 공유하고자 하는 user의 이메일 주소 입력
  - 공유 받을 user가 이메일을 통해 승인하면 내용 공유 완료

Home	Overview	Benchmarking Collab	poration	My SciVal
My SciVal				
f Institutions and Gr	oups	Research Areas		
L Researchers and G	iroups	Type to filter <b>Q</b> All entities you ca	an use in SciVal 🔻 All tags 🔻	
Publication Sets		Add to entity selection panel	ags 🔋 Delete	Define a new entity 🔻
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		This entity is shared with:		
		Email address ≐	Status	
		Da.lee@elsevier.com	pendinį	resend invitation stop sharing



- My SciVal에서 Researcher 등록하기 (계속)
  - 1. My SciVal에서 'Researchers and Groups' 선택
  - 2. 'Define a new entity' 선택 후 'Define a new Researcher' 선택
  - 3. Pop up 창의 각 필드에 연구자의 성과 이름, 소속 기관을 입력 후 'Search'

SciVal					Yoon Hee Kang 👻 Help 🔻
Home	Overview	Benchmarking	Collaboration		My SciVal
My SciVal					
Institutions and Groups	(1	Researchers and Groups			
Researchers and Groups		Type to filter	All entities you	can use In SciVal 🔻 All tags 🔻	
Publication Sets		Add to entity selection par	nel 💊 Add tags 👕 Delete		2 Define a new entity +
Countries and Groups		□ Name ▲		Tags	Define a new Researcher
SE Research Areas	Define a new Reso Combine author name v	AS-Biodiversity Re	search Center		Define a new Group of Researchers Define a new Group of Researchers from selection Import a list of Researchers
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	Author	<b>Last name</b> kim E.g., Smith	Initials or First name n.s. E.g., J.L.		
	Institution	pusan national university E.g., Ohio State University		Add aditional fields 🔻	
				Search	



### • My SciVal에서 Researcher 등록하기

- 4. 동명이인, 같은 이니셜의 연구자가 여러 명 검색되는 경우, 해당되는 프로파일을 가려내어 선택
- 5. 저자 프로필에 등록된 논문 정보 확인하고 'Next Step'으로 진행

6

Save your researcher as

6. 저자명 표기 방식을 선택한 후 'Save and finish'

Define a new Researcher Combine author name variants into a single researcher	Define a new Researcher Combine author name variants into a single researcher				
STEP 1: Search STEP 2: Select STEP 3: Save	STEP 1: Search STEP 2: Select STEP 3: Review STEP 4: Save				
vi searched for: Authorname (kim, HYOUNJIN) and Institution (seoul national university)	Review list of publications associated with this Researcher				
Authors Documents Subject area	(5)				
Kim, Hyounjin     T     Engineering, Chemical Engineering, Computer Science, Chemistry, Mathematikan, Hyoun Jin     Astronomy, Materials Science     Hide recent documents     Policy improvements for probabilistic pursuit-evasion game (2014)     Inverse of mathematics and expositions	Author(s)     Date     Source Title       Decentralized trajectory optimization using virtual motion camouflage and particle swarm     Kwak, D.J., Choi, B., Cho, D., Kim, H.J., Lee, CW.     2014     Autonomous Robots       view in Scopus     View in Scopus				
Evaluation of http://www.tDE.ford lighth.tuminaires.using CAE techniques (2012) journal of Ceramic Processing Relearch	Design of a base station for mems CCR localization Park, C.G., Jeon, H.C., Kim, H.J., Kim, J.Y. 2014 Sensors (Switzerland) 14 (5), pp. 8313 in an optical sensor network View in Scopus				
2 Kim, Hyounjin 107 Physics and Astronomy, Computer Science, Materials Science, Engineering, E Kim, HJin Engineering, Mathematics, Chemistry, Biochemistry, Genetics and Molecular Hide recent documents	A multi-class classification approach for target     Kim, W., Park, J., Kim, H.J., Park, C.G. 2014 Journal of Mechanical Science and Technology 28 (1), pp. 323     localization in wireless sensor networks     View In Scopus				
Previous step	Semisupervised location awareness in wireless Yoo, J., Kim, H.J. 2014 International Journal of Distributed Sensor Networks 2014     Previous step Can't see a publication you think should be here? - Search for missing publications     Next step				
※ Scopus Author ID를 통해 저자 정보를 불러올 수 있습니다 ※ SciVal을 통해 수정된 저자 정보는	Define a new Researcher         Combine author name variants into a single researcher         STEP 1: Search       STEP 2: Select         STEP 1: Search				

Kim, Hyounjin

Save and finish

※ Scopus에서 update 되는 논문 정보가 SciVal 분석에도 반영됩니다

SciVal

- Scopus Author ID를 관리하고 있는 경우에는 해당 ID를 등록하는 방법도 권할 만함
  - Additional fields 중 Scopus author ID 검색을 선택하면 가장 간단하게 researcher



- 등록한 연구자/ 연구자 그룹은 Overview module과 Benchmarking module에서 개별 분석 단위로 활용 가능
  - 연구자 포트폴리오 관리 및 연구팀의 성과 분석 등에 활용
  - 연구자 CV 작성 및 연구 기금 신청 시 분석 자료로 활용

Park, I.					
📧 Pusan Natio	nal University	View this Resea	rcher in Scopus		
Source: Scopus	data up to 06 Nov 2	.014 2009 t	no filte	r selected	•
Summary	Publications	Citations	Collaboration		
Overall rese	arch performa	nce			📆 Download page as PDF
Publications 56	Citation: <b>192</b>	S	Authors <b>1</b>	Field-Weighted Citation Impact 0.83	Citations per Publication <b>3.4</b>
	Ed	arth and Planetar Engineering	Other (2 ry Sciences (2.2%) ; (24.1%)	.2%) Mathematics (9.5%) Physics and	d Astronomy (27.0%)

- 연구자/ 연구자 그룹 간의 성과 비교 분석 용으로 활용 가능
  - 학과 성과 관리 및 분석, proposal 제출 시 raw data로 활용





- 특정 연구 과제를 위한 연구팀 구성 시나리오 검증 용으로 활용 가능
  - 예를 들어, E 교수님은 발표한 논문 수는 상대적으로 적으나, 국제 연구 협력
     경험이 풍부해 해외 연구진과의 공조 유치에 기여할 수 있는 가능성이 큼
  - 우측 연구자 리스트 옆의 눈 그림을 ♥ 클릭하면 특정 연구원을 추가/제외 하면서 분석을 진행할 수 있음





- 등록된 연구자를 그룹으로 묶어 분석할 수 있으며, 경쟁 학교 간 과 별 비교 분석 가능
- 연구자 및 연구팀에서 각 저널 별 발표한 논문 수를 분석하는 기능 또한 제공됨

Entity ≐		Scholarly Output	Publications in Top 1 Journal Percentiles (%	0 International 6) collaboration (%)
Research	her Group 1	506	29	7 17.4
Research	her Group 2	216	58	.1 19.4
View list o	of journals for the selected Researchers and Groups			
	Journal	SNIP 🔻 🗧	Researcher Group 1	Researcher Group 2
	Annual Review of Fluid Mechanics	15.243	1	0
	Nature Materials	10.307	0	5
	Science	7.900	0	1
	Chemical Society Reviews	6.593	0	3
	Accounts of Chemical Research	4.865	0	2
	IEEE Journal of Solid-State Circuits	4.055	1	o
	IEEE Transactions on Robotics	3.891	11	0
	Nano Today	3.886	0	1
	CIRP Annals - Manufacturing Technology	3.807	1	0
	Advanced Materials	3.800	0	14
	IEEE Robotics and Automation Magazine	3.782	2	0
	Nano Letters	3.549	1	9
	Journal of Materials Processing Technology	3.518	1	0
	IEEE/ASME Transactions on Mechatronics	3.514	4	o
	IEEE Transactions on Control Systems Technology	3.492	2	0
	Control Engineering Practice	3.293	2	o

### 4. Publication Set 분석하기

#### My SciVal에서 Publication Set 등록하기

- 1. My SciVal에서 'Publication Sets' 선택
- 2. 'Define a new entity' 선택 후 'Define a new Publication Set' 선택
- 3. 분석할 논문을 보유한 연구자 선택
- 4. 분석할 논문을 선택
- 5. Publication Set의 이름을 지정하고 저장



## SciVal

## 4. Publication Set 분석하기



- Publication Set은 Benchmarking module에서 분석 단위로 활용 가능
  - 특히, 연구 프로젝트 수행 결과 보고 시 다양한 분석 결과를 손쉽게 도출할 수 있음

My Publication Set - 21 October 2014 2 My Publication Set - 21 October 2014 2 Outputs in Top 10% of Publications in Top 10 Publications in Top 10 My Publication Set - 21 October 2014 11.3 My Publication Set - 21 October 2014 2 My Publication Set - 21 October 2014 2 My Publication Set - 21 October 2014 2 Publication Set - 21 October 2014 2 My Publication Set - 21 October 2014 2 Publication Set -	Internationa ollaboration (%)	Citation Impact	Field-Weighted C I	arly Output	Sch						Entity ±
<ul> <li>My Publication Set - 21 October 2014 2</li> <li>My Publication Set - 21 October 2014</li> <li>My Publication Set - 21 October 2014 2</li> </ul>	17.4	1.88		506					ober 2014	tion Set - 21 Oct	My Publication
Outputs in Top 10% of the World (%)       Publications in Top 10 Journal Percentiles (%)       Publications in Top 10 Journal Percentiles (%)       Publications in Top 10 Journal Percentiles (%)       Publications (%)         My Publication Set - 21 October 2014 2       11.3       29.7         My Publication Set - 21 October 2014 2       14.2       26.8         Scholarly Output *         Field-Weighted Citation Impact *         Outputs on Set - 21 October 2014 2	27.4	3.17		499				2	ober 2014	tion Set - 21 Oct	My Publication
My Publication Set - 21 October 2014 2 My Publication Set - 21 October 2014 2 14.2 26.8	ications in Top al Percentiles (%	n Top 10 Itiles (%)	Publications in Journal Percenti	Top 10% of e World (%)	Outputs i t						Entity ≟
My Publication Set - 21 October 2014 2       14.2     26.8	2.	29.7		11.3					ober 2014	ion Set - 21 Oct	My Publication
y-axis	3.	26.8		14.2				2	ber 2014 (	ion Set - 21 Oct	My Publication
		21	Publication Sets My Publication Set - 21 October 2014 My Publication Set - 21 October 2014 2						550 500 450 400 350 300		
									250 200 150 100 50 0		
0.00 0.50 1.00 1.50 2.00 2.50 3.00				3.00	00 2.50	1.50	1.00	0.50	0.00		



- My SciVal에서 Research Area 등록하기 (계속)
  - 1. My SciVal에서 'Research Areas' 선택
  - 2. 'Define a new entity' 선택 후 'Define a new Research Area' 선택
  - 3. 'Use search terms' 'Use entities' 'Use competencies' 탭 중에서 원하는 기능 선택





- My SciVal에서 Research Area 등록하기 (계속)
  - 4. 'Use search terms'를 선택한 경우, 검색식을 활용해 연구 키워드 검색
  - 5. 검색 결과를 바탕으로 연구 분야, 저널, 연구 기관, 국가, 기관 타입 등을 조절
  - 6. Research Area 이름 지정 후 저장

Define a new Research Area View quick guide	Define a new Research Area View quick guide
STEP 1: Create definition         STEP 2: Refine definition         STEP 3: Save definition	STEP 1: Create definition STEP 2: Refine definition STEP 3: Save definition
Use search terms Use entities Use competencies Define a new Research Area based on one or more search terms:	Definition of your Research Area: <b>"3d print</b> " or <b>"3-d print</b> " Puest cations matching the current definition: 1,725 (1996-present)
	Journal Categories Total matching publications
"3d print"	Journals () Why are you seeing multiple Journal Categories?
	Institutions Engineering
OR   "3-d print"  K Remove field +	Countries Di 536
Type important terms (e.g. solar flare) or an exact word or phrase (e.g. "solar flare")	Organization types Physics and Astronomy P1 279
🜻 View more tips	Medicine
Search	Biochemistry, Genetics and Molecular Biology
Define a new Research Area       View quick guide         STEP 1: Create definition       STEP 2: Refine         Save your Research Area as:       3d printing + 3-d printing         Add tags (optional):       Enter a tag	※ Scopus에서 update 되는 논문 정보가 SciVal 분석에도 자동적으로 update 됩니다         ※ My Research Area는 100,000건 이하의 논문 관련 내용으로 구성해야 합니다
This Research Area will be updated approximately every two weeks with new publications matching the definition.   View Research Area summary	└ ※ My Research Area가 1,500개 이상의 논문으로 구성되는 경우, 해당 Research Area가 활성화 되기까지 최대 48시간이 소요될 수 있습니다 (계정에 등록된 email로 안내 메일 송부)



 My Research Area는 Overview module과 Benchmarking module에서 연구 단위로 사용될 수 있음

"Corrosi	on resistan	ce"								
Source: Scopus o	data up to 06 Nov 201	14 2009 to	2013 🔻	no filter selecte	d	·				
Summary	Publications	Citations	Authors	Institutions						
Research performance										
Pusan National U	Jniversity has <b>33</b> pub	lications in this	Research Ar	ea:						
Publications	Citations 118		Authors 61		Field-Weighted Citation Impact	Citations per Publication <b>3.6</b>				
🕒 View list of pu	View list of publications									
Scholarly Output 🤹										
175			- <b>Г</b>		Publications					
125	_		_ 0	Worldwide	14,892					
100 75			_ 0	Asia Pacific	8,511					
50 — 25 —				South Korea	601					
0 2009	2010 2011	2012 201	13	Pusan Natio	nal University 33					



 연구 키워드를 통해 Research Area를 등록하면, 해당 키워드와 관련된 연구 동향을 확인하는 데 특히 유용함





따라

다양한 연구 키워드 중 향후 집중해야 할 분야나 논문 주제를 선정해야 할 경우에는 각 키워드 별 비교 분석을 통해 아이디어를 얻을 수 있음







# **3. Collaboration Analysis**



Empowering Knowledge



- Collaboration module에서는 특정 기관의 국제 연구 협력 현황을 확인할 수 있음
- 기간 (최근 3년 혹은 5년) 및 주제 분야에 따른 분석 가능





각 연구 분야 별 Collaboration 분석을 진행하면 공동 연구 파트너 검색이 용이함

Source: Scopus data up to 06 Nov 2014 2009 to 2013 🔹 Materials Science 🔹									
Current collaboration Potential collaboration									
Map     Table       Export •     Shortcuts •   Find Institution •									
Institutions collaborating with Pusan National University									
Worldwide   All sectors									
1,384 co-authored publications									
Institution	Co-authored publications	Co-authors at C Pusan National University	Co-authors at the other institution	Field-Weigh 🔻 🔻					
Massachusetts Institute of Technology	5 🔺	7 🔺	40 🔺	5.40					
University of Minnesota	5	6 🔺	9 🔺	5.00					
Stanford University	5 💌	4 🔺	19 🔺	4.80					
Korea Research Institute of Chemical Technology	34 🔺	62 🔺	19 🔺	3.44					
Guangdong University of Technology	9 🔺	19 🔺	1 🔺	3.22					
Morthwestern University	9 🔺	12 🔺	17 🔺	3.11					
CSIR - Chemistry and Physics	4	11	5	3.00					
Fudan University	8	10 🔻	10	2.75					
Catholic University of Korea	45 🔺	25 🔺	16 🔺	2.44					



특정 기관을 선택하면, 기존 공동 연구의 결과를 쉽게 확인 가능함

Collaboration with the Massachusetts	Institute of Tec	nnology			X	
Within: Materials Science   Year range: 2009 to 201	13			Exț	oort • Shortcuts •	
Overview Current co-authors Po	otential co-authors					
💌 Pusan National University		Co-authored publication	ns	Massachusetts Institute of Tech	hnology	
7 • co-authors with the Massachusetts Institute of Technology		5 🔺		40      co-authors with     Pusan National University		
Total output of this Institution		View list of publications		Total output of this Institution		
Citations	1 <b>2,194</b> Cit	ations	159	Citations	80,807	
Citations per Publication	5.6 Cit.	ations per Publication	31.8	Citations per Publication	15.6	
Field-Weighted Citation Impact	1.11 Fie	ld-Weighted Citation Impact	5.40	Field-Weighted Citation Impact	2.74	
Publications	2,193 🔺			Publications	5,166 🔺	
Authors	1,827 🔺			Authors	4,175 🔺	

Hwang, J.



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- 해당 Collaboration에 기여한 저자 목록 및 논문 목록도 쉽게 확인 가능함
  - 각 대학 별 공저자 목록 및 논문 목록이 제공되어 이 정보를 바탕으로 한 추가 collaboration 기회 혹은 project plan 수립이 가능함
  - 해당 저자 및 논문 Abstract를 Scopus에서 확인할 수 있는 링크 제공

Within: Materials Science   Year range	e: 2009 to 2013	3					Export			
<ul> <li>Authors</li> </ul>	5	5 publications								
<ul> <li>All authors</li> <li>Tanner, D.B.</li> <li>Dhurandhar, S.</li> <li>Engel, R.</li> <li>Grant, A.</li> <li>Mittleman, R.</li> </ul>	2 1 1 1	Title A review of nonlinear oscillatory she application of large amplitude oscill View abstract   View in Scopus	ear tests: Analysis and latory shear (LAOS)	Authors Hyun, K. et al.	Year 2011	Journal Progress in Polymer Science (Oxford)	Citations <del></del> 111			
Show more		a states t								
<ul> <li>Institutions</li> <li>All institutions</li> <li>Massachusetts Institute of Technolog</li> <li>Pusan National University</li> <li>Seoul National University</li> </ul>	Within: Ma	ration with the Massachus iterials Science   Year range: 2009 iew Current co-authors	9 to 2013 Potential co-author	s					Export •	Sho
University of Florida University of Minnesota										
Show more	Co-autho	an National University vrs with the Massachusetts Institute	of Technology		💷 🐧 Co-au	Massachusetts Institute of uthors with Pusan National U	o <b>f Technology</b> niversity			
Show more  Countries	Co-autho	an National University ors with the Massachusetts Institute	of Technology		<u>ш</u> р Со-ац	Massachusetts Institute of uthors with Pusan National U	o <b>f Technology</b> niversity	Consuthered		
Show more Countries Journals	Co-autho Author	an National University ors with the Massachusetts Institute	of Technology Co-authored publications	Citations <b>v</b>	Co-au 	Massachusetts Institute of uthors with Pusan National U thor	of Technology niversity	Co-authored publications	Citations	
Show more Countries Journals Journal Categories	Co-autho Author	an National University ors with the Massachusetts Institute r	of Technology Co-authored publications	Citations •	Co-au Au	Massachusetts Institute of uthors with Pusan National U thor McKinley, G.H.	of Technology niversity	Co-authored publications	Citations	▼ 111
Show more Countries Journals Journal Categories Keywords	Pus:     Co-autho     Author     Hyu     F Hyu	an National University ors with the Massachusetts Institute r .in, K. o, H.S.	of Technology Co-authored publications 1	Citations • 111	Co-au Au	Massachusetts Institute of uthors with Pusan National U thor McKinley, G.H. Barsotti, L.	o <b>f Technology</b> niversity	Co-authored publications 1	Citations	▼ 111 33
Show more Countries Journals Journal Categories Keywords Publication years	Pus: Co-autho Author Hyu Cho	an National University ors with the Massachusetts Institute r .n, K. o, H.S. I, YM.	of Technology Co-authored publications 1 1	Citations • 111 33	Co-au Au	Massachusetts Institute of uthors with Pusan National U thor McKinley, G.H. Barsotti, L. Biscans, S.	of Technology niversity	Co-authored publications 1 1 1	Citations	▼ 1111 33 33
Show more Countries Journals Journal Categories Keywords Publication years	Co-autho  Author  Author  Kim  Kim  Lee	an National University ors with the Massachusetts Institute r un, K. o, H.S. h, YM. y CH.	of Technology Co-authored publications 1 1 1 1	Citations • 111 33 33 33		Massachusetts Institute of uthors with Pusan National U thor McKinley, G.H. Barsotti, L. Biscans, S. Bodiya, T.P.	of Technology niversity	Co-authored publications 1 1 1 1 1	Citations	<ul> <li>111</li> <li>33</li> <li>33</li> <li>33</li> </ul>
Show more Countries Journals Journal Categories Keywords Publication years	Pus: Co-autho Author Hyu Chc Kim Lee Yan	an National University ors with the Massachusetts Institute r un, K. o, H.S. h, YM. cH. Ig, S.Y.	of Technology Co-authored publications 1 1 1 1 1 1	Citations • 111 33 33 33 32 12	Au Au	Massachusetts Institute of uthors with Pusan National U thor McKinley, G.H. Barsotti, L. Biscans, S. Bodiya, T.P. Donovan, F.	of Technology niversity	Co-authored publications 1 1 1 1 1 1 1	Citations	<ul> <li>T</li> <li>111</li> <li>33</li> <li>33</li> <li>33</li> <li>33</li> <li>33</li> </ul>

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Essick, R.

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### 2. Potential collaborations



- 향후 공동 연구를 진행할 연구자를 물색 중이라면, 앞의 기능으로 확인 가능한 연구자 리스트 이외에, Overview module의 'Search for competencies'를 활용할 것을 권함
  - 소속 기관 혹은 관심 연구 기관의 Competency를 기준으로, Institutions와 Authors 탭에서 해당 Competency를 공유하는 다른 연구 기관 및 Top 저자 정보 확인

Instit	ution				Publications in this field	Fractionalized publication count		
1.	Technische Universitat Braunschweig			Germany	8	5.5	_	
2.	Hamburg University of Technology			Germany	12	5.3	_	
3.	University of Genoa			Italy	6	4.8	_	
4.	Pusan National University			South Korea	7	4.2		
5.	Karlsruhe Institute Author					Publications in this field	Fractionalized publication count	
6.	RWTH Aachen Uni	1.	Herion S.	Forschungszentrum Karlsruhe; K	arlsruhe Institute of Techno	logy KIT 6	5.0	
7.	Dalian Jiaotong Ur	2.	Rizzo C.M.	University of Genoa		6	4.8	
8.	University of Leob	of Leob 3. Fricke W. of Lecc 4. Dilger K. 5. Nitschke-Pagel T.N.		Hamburg University of Technolog	37	10	4.7	
9.	University of Lecce			Technische Universitat Braunsch	weig	6	4.4	
10	0.1.11.2			Technische Universitat Braunsch	weig	6	4.2	
10.	Opole University c 6. Feldmann M.		RWTH Aachen University		4	3.4		
	_	7. Kim M. Pusa		Pusan National University		5	3.4	_
		8. Farajian M. Technische Universitat Braunschweig		weig	5	3.3		
	9. Dattoma V. Univers			University of Lecce		4	3.2	_
		10.	Nobile R.	University of Lecce		4	3.2	



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# Thank you!



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