CiteSpace ——

可视化识别科学文献中新趋势与新动态

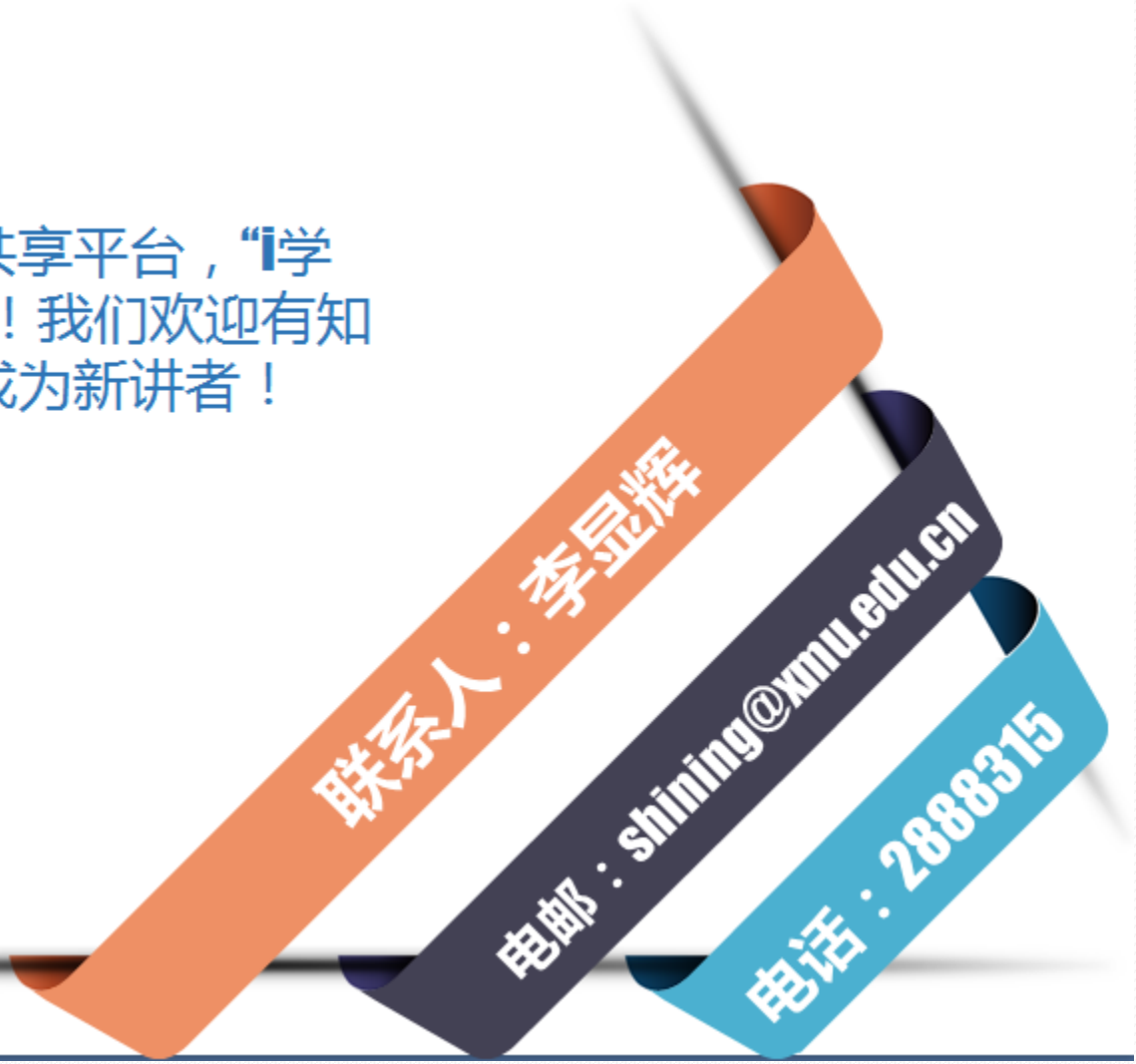
聂茶庚 ncg@xmu.edu.cn

联系我们：图书馆官方微信

联系我们：「i学堂」翔安交流群（532686919）

联系我们

作为一个开放的信息与知识共享平台，“i学堂”诚挚邀请新生力量的参与！我们欢迎有知识与技能，且乐于分享的您成为新讲者！



与研究前沿相关的主要问题

- 它是怎么开始的？
- 现状如何？
- 其演化中的重要路径是什么？

- 识别和分析新趋势的出现及与研究前沿密切相关的突变
- 确定某个特定时间上，基于相关知识基础的研究前沿的关注焦点，进而揭示导致研究前沿演变的重要知识转折点，并发掘不同研究前沿间的联系

文献科学计量解决的问题

- 科学领域海量科技文献？
  ——科学知识的结构和演化动力
  ——结构洞与知识拐点
  ——研究范式的转变

找出知识拐点

- 我们可以做？
  ——发现新出现的研究范式
  ——识别引起转变的知识点（重大发现）
  ——主动预测 (可能)将出现的新热点（新发现）

探测潜在的知识拐点

内容

- CiteSpace介绍
- 使用CiteSpace进行文献的共被引分析
- 使用CiteSpace进行中文的文献分析——CSSCI和CNKI
- 不同研究领域最新发表的使用CiteSpace进行文献科学计量的论文

CiteSpace介绍

主要功能

- 学科领域的知识结构和演化路径
- 学科领域演化过程中的关键文献（知识拐点）
- 探测潜在的关键文献（知识拐点）
- 分析学科前沿热点
- 学科领域演化过程中的基础知识

CiteSpace介绍

- 由美国德雷克赛尔大学（费城）信息科学与技术学院（The College of Information Science and Technology, Drexel University）Dr. ChaomMei Chen研究开发

  http://blog.sciencenet.cn/home.php?mod=space&uid=496649

- 基于JAVA的应用软件，可免费使用 http://cluster.ischool.drexel.edu/~cchen/citespace/download.html

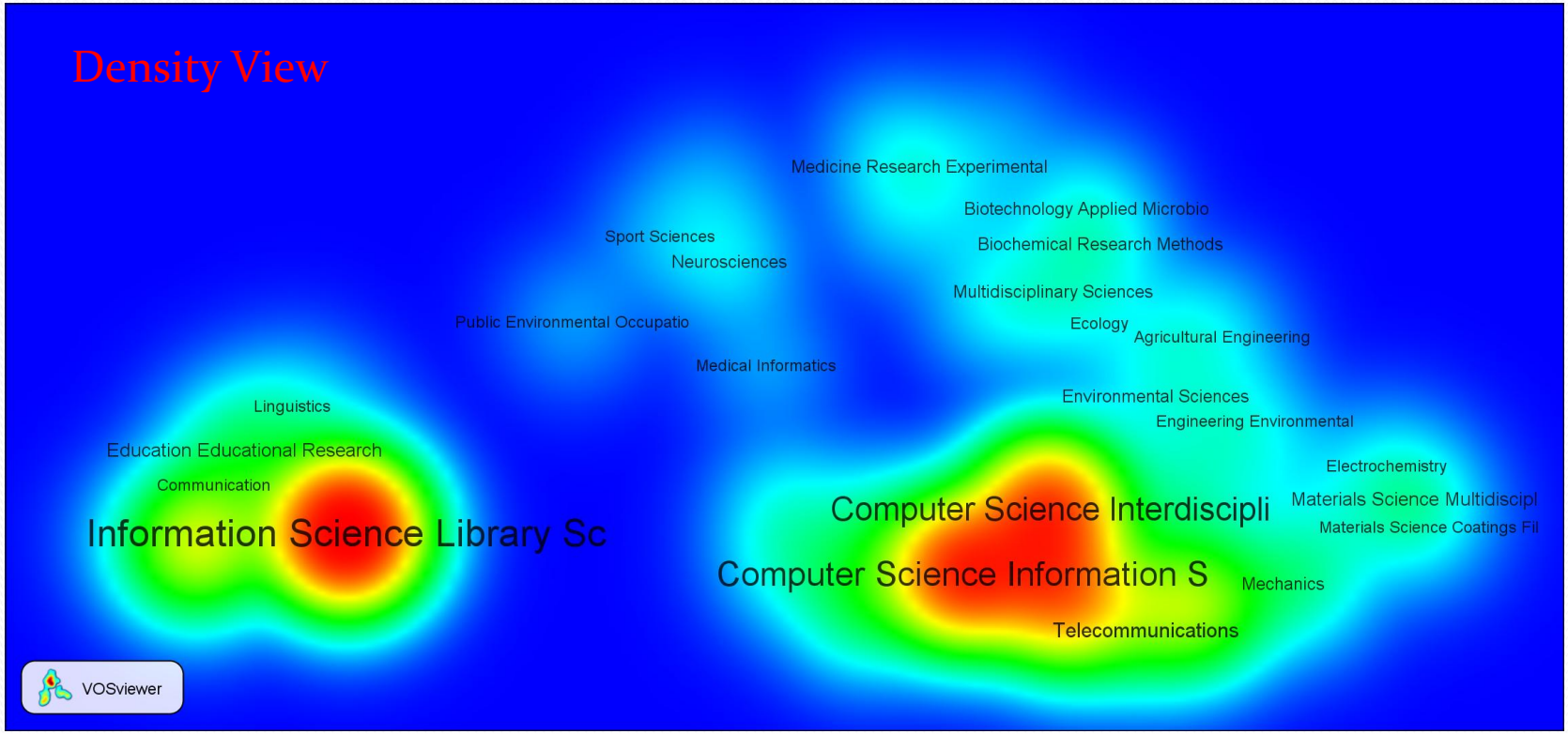
CiteSpace介绍

- Dr. ChaomMei Chen研究开发Information Visualizition——CiteSpace是近年来信息分析领域最具影响力的信息可视化软件

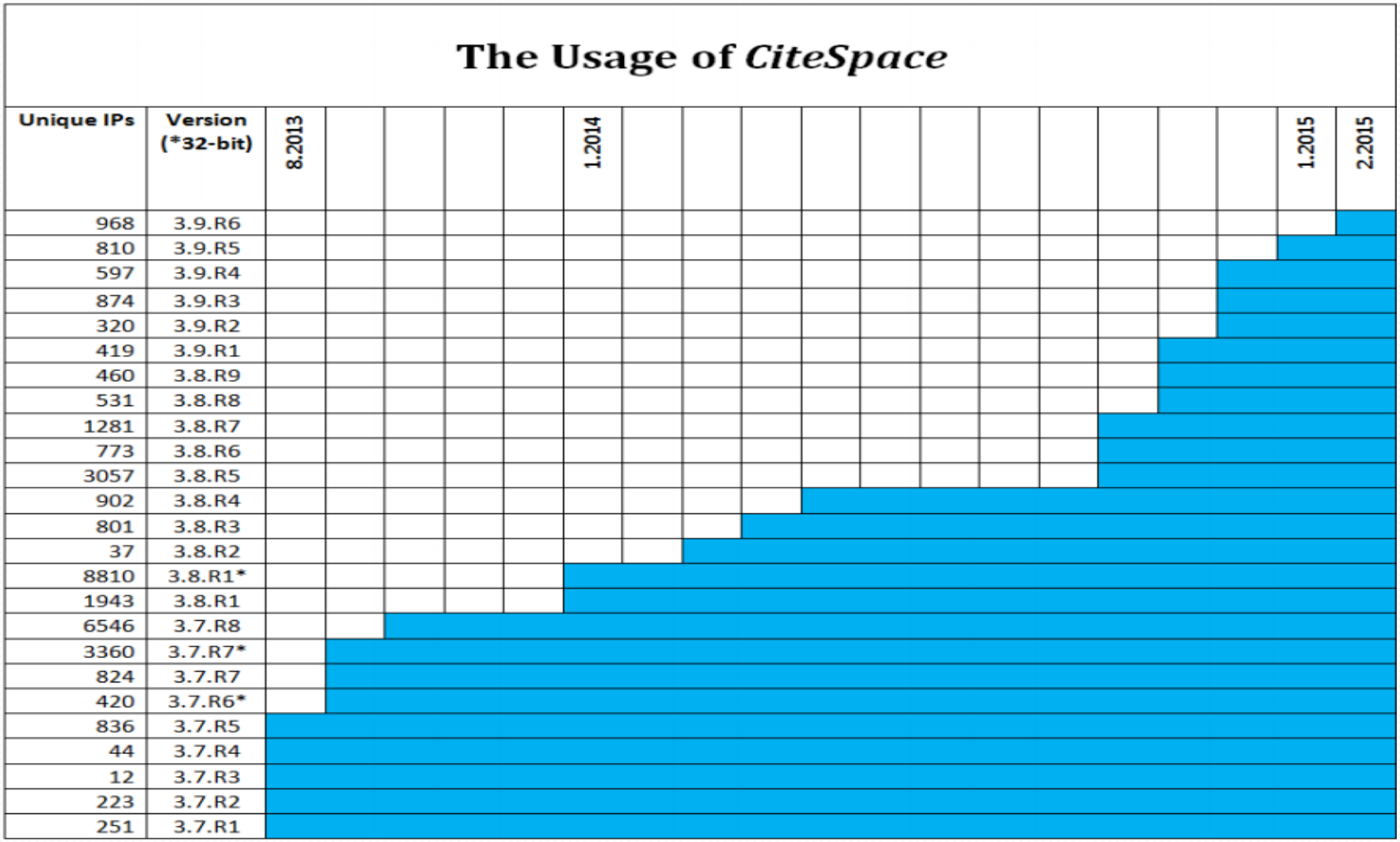
- 以其强大的文献共被引分析而知名，且随着算法不断的发展，功能不断优化

- 当前CiteSpace已经被广泛应用于计算机科学、信息科学以及医学等60多个领域（根据WoS分类统计，如下图）

引用CiteSpace经典文献的施引文献的领域分布



CiteSpace的用户



相关概念和术语

- 两种不同引文半衰期科学文献：
  - 经典文献（classical literatures）：持续高被引
  - 过度文献（transient literatures）在短时间内达到被引峰值
- 研究前沿
  - 研究前沿代表了一个研究领域的思想现状。是基于新近研究成果形成某研究领域的一组突现的动态概念和潜在的研究问题。
  - CiteSpace采用Kleinberg设计的突变检测算法辨认新兴研究前沿专业术语概念，研究前沿是基于从题目、摘要、系索词descriptors，指标引文献主题的单元词或词组）和文献记录的标识符中提取出的突变专业术语而确定的。依据这些术语在文献中共同出现的情况进行聚类分析，得到“研究前沿术语的共现网络”。

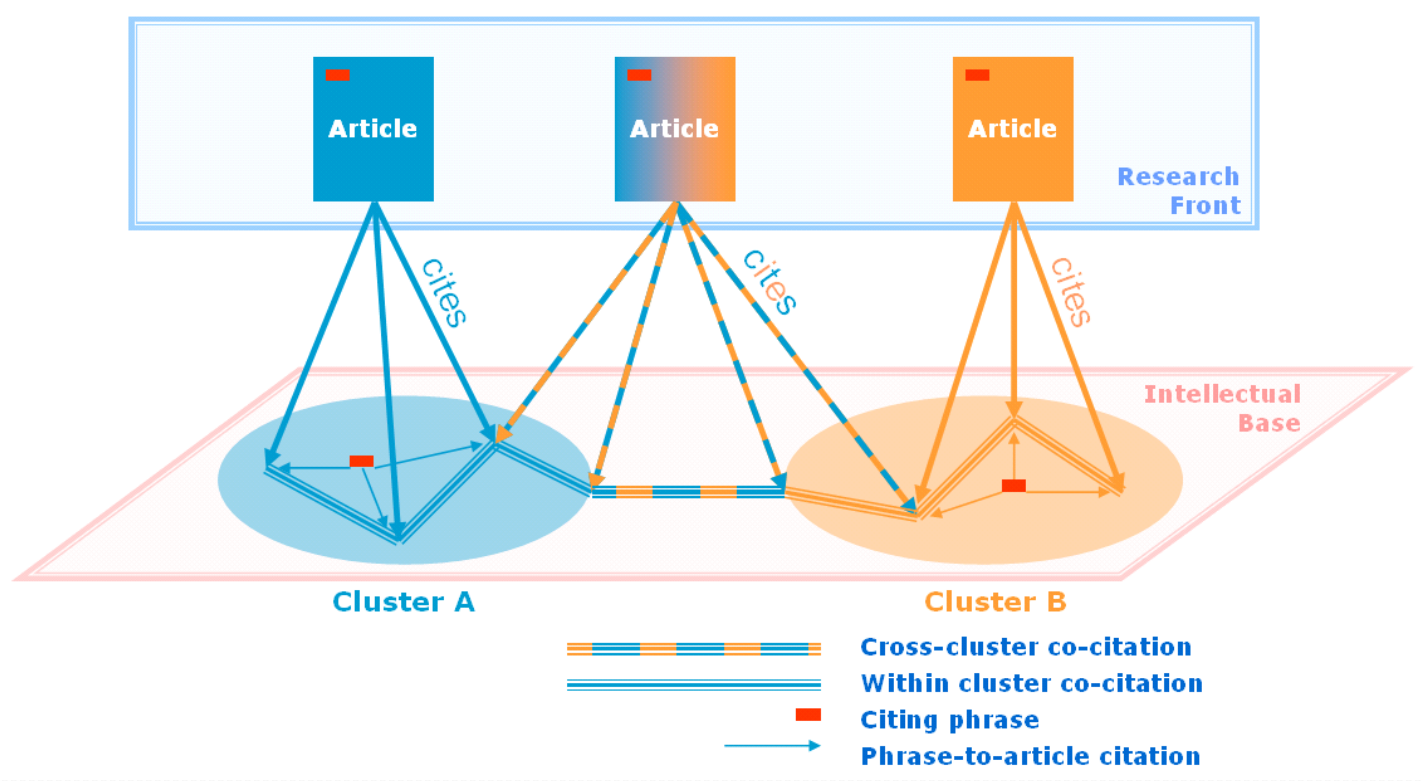
知识基础

- 知识基础是研究前沿在文献中的引用轨迹，反映研究前沿中的概念在科学研究中的利用与传播情况。
- CiteSpace对上述引用轨迹进行聚类分析，得到“知识基础文献的共被引网络”。

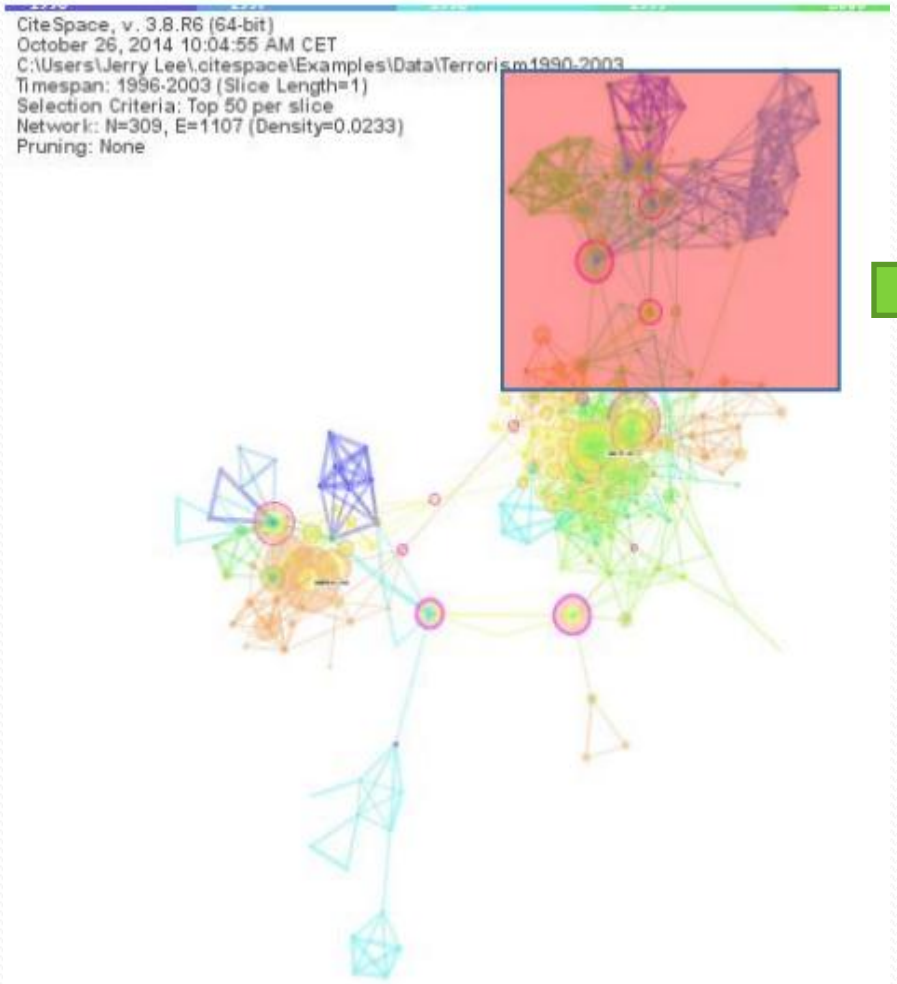
研究前沿 ——过渡文献

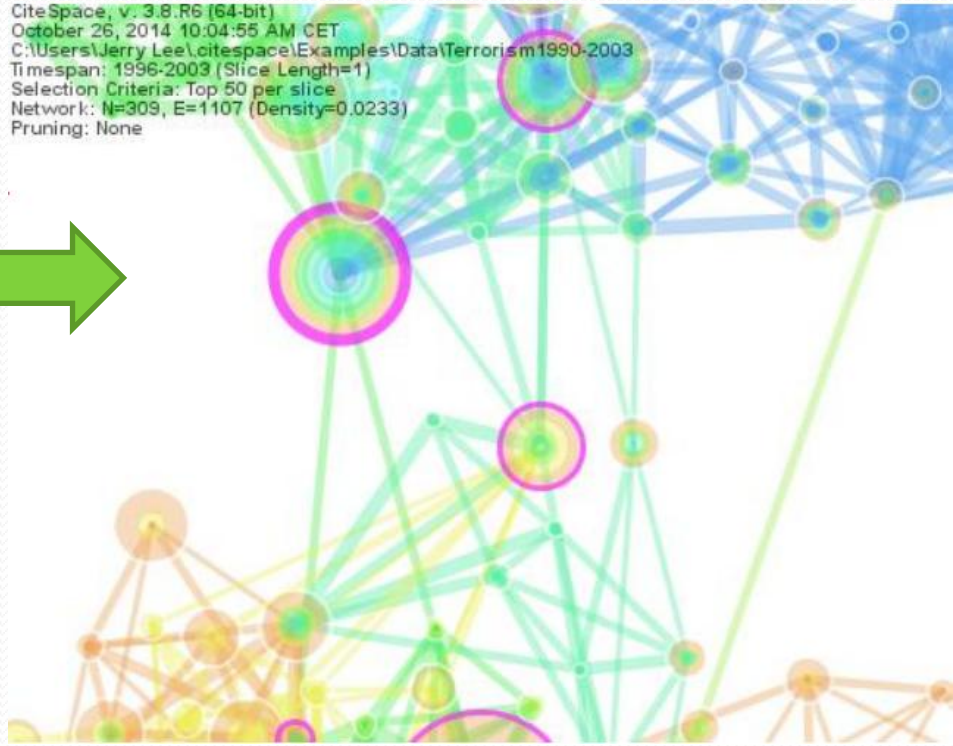
知识基础 —— 过渡文献的引文

CiteSpace概念模型

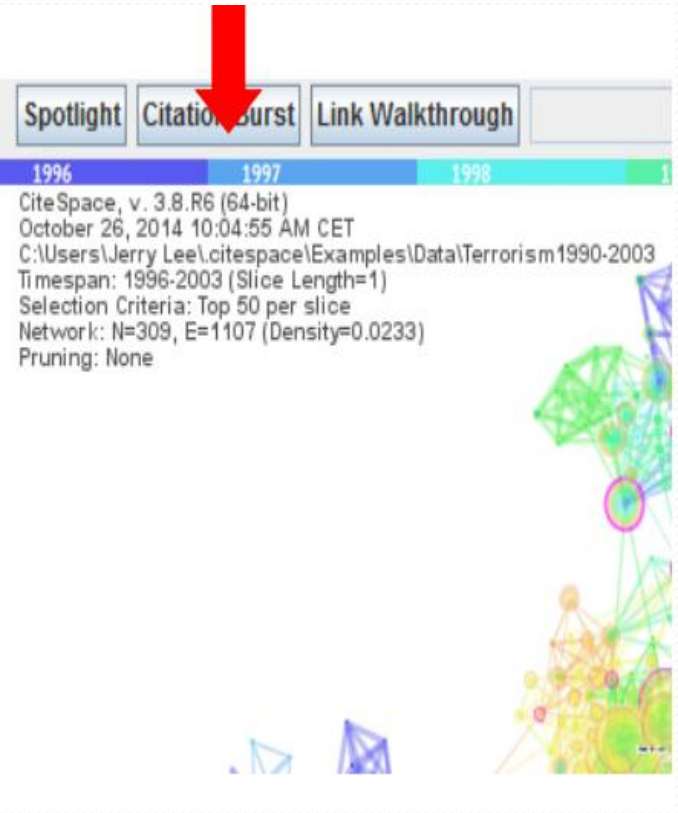


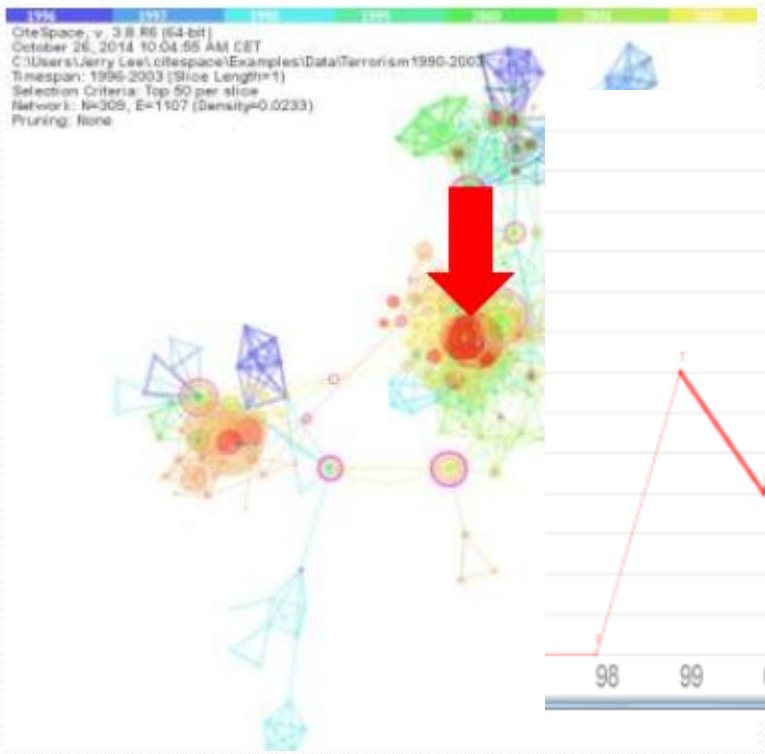
- Betweenness centrality：中介中心性是测度节点在网络中重要性的一个指标。CiteSpace 中使用此指标来发现和衡量文献的重要性，并用紫色圈对该类文献（或作者、期刊以及机构等）进行重点进行标注。

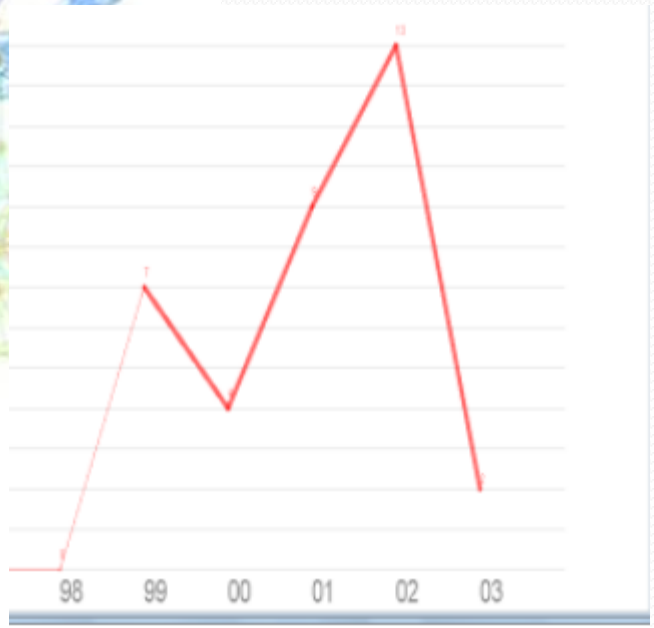




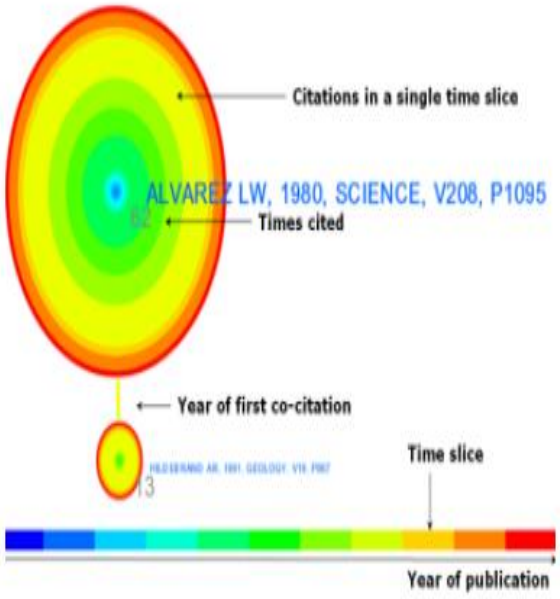
- Burst 检测：突发主题（或文献、作者以及期刊引证信息等）。在CiteSpace 中使用Kleinberg, J（*Kleinberg J. Bursty and hierarchical structure in streams[C]//Proceedings of the eighth ACM SIGKDD international conference on Knowledge discovery and data mining. ACM, 2002: 91-101.*）年提出的算法进行检测。





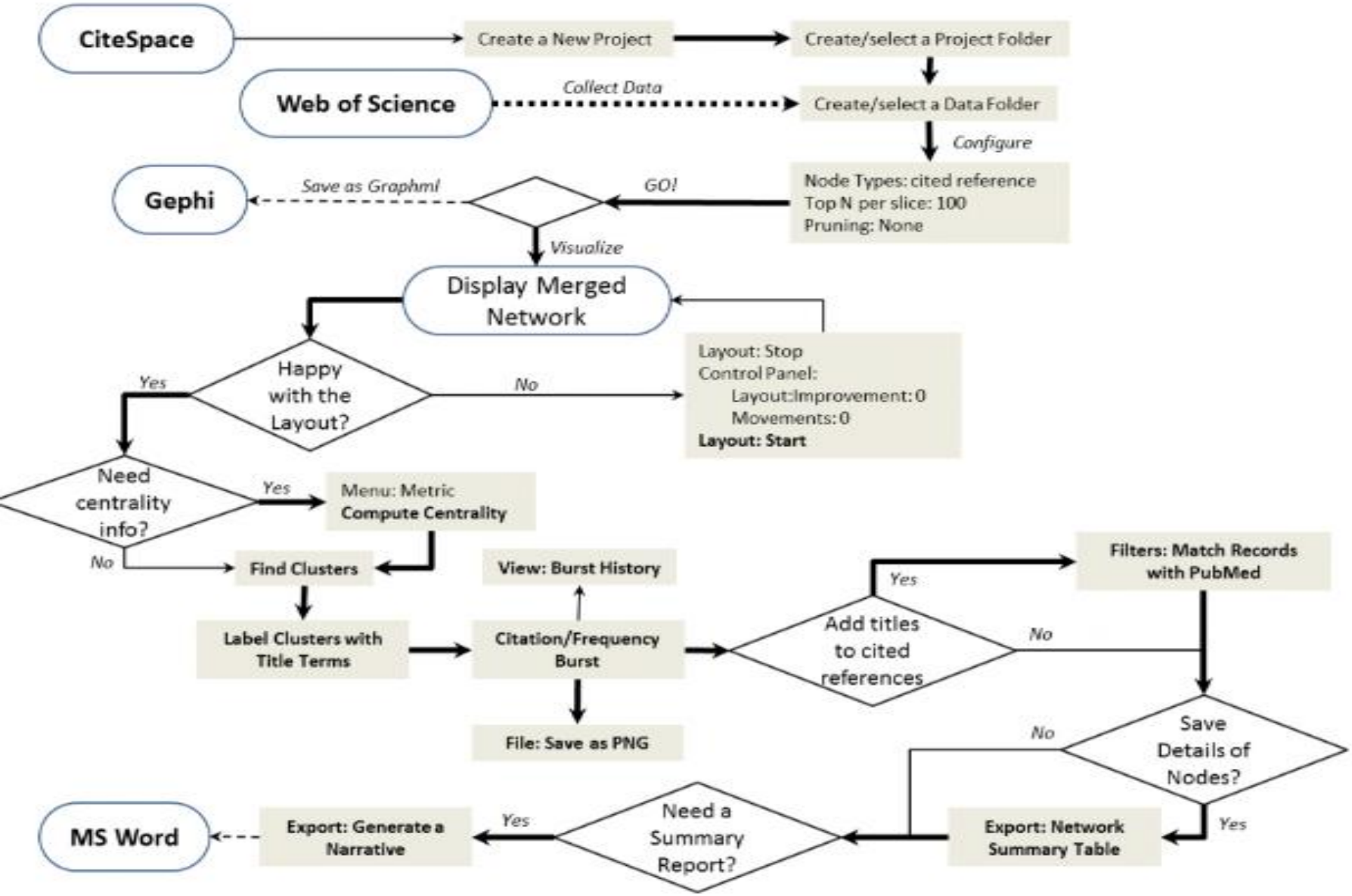


- Citation tree-rings：引文年环–代表着某篇文章的引文历史。引文年轮的颜色代表相应的引文时间，一个年轮厚度和与相应时间分区内引文数量成正比。



CiteSpace图例

CiteSpace工作流程



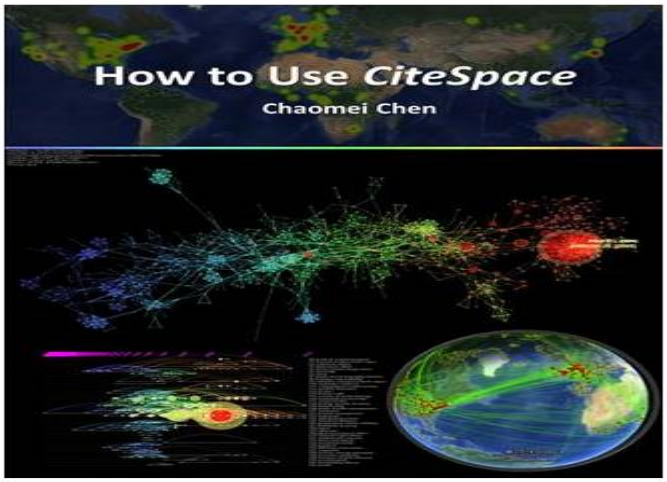
CiteSpace的获取与安装

- 获取http://cluster.ischool.drexel.edu/~cchen/citespace/download.html

CiteSpace: Visualizing Patterns and Trends in Scientific Literature

Chaomei Chen

See CiteSpace101 for more!



Date	Version	Download *CiteSpace*	Download *Java JRE*	Notes
Dec 29, 2015	4.0.R5 SE (64-bit)	7z	64-bit / Windows x64	Require Java 8
Dec 27, 2015	4.0.R5 SE (64-bit)	7z	64-bit / Windows x64	Require Java 8
Dec 17, 2015	4.0.R5 SE (64-bit)	7z	64-bit / Windows x64	Require Java 8
Nov 25, 2015	4.0.R4 (64-bit)	7z	64-bit / Windows x64	Require Java 8
Nov 14, 2015	4.0.R3 (64-bit)	7z	64-bit / Windows x64	Require Java 8
Oct 14, 2015	4.0.R2 (64-bit)	7z	64-bit / Windows x64	Require Java 8

Requirements

Java Runtime (JRE)

Java Runtime (JRE) is required to run CiteSpace. Make sure you install the JRE that matches to your system. If you have a 32-bit system, you need to install the JRE for Windows x86. If you have a 64-bit system, install the JRE for Windows x64. CiteSpace is currently optimized for Windows 64-bit with Java 8.

Memory or RAM

It is recommended that you should have at least 1024MB (=1GB) of memory on your computer.

使用CiteSpace进行文献的共被引分析

使用CiteSpace的步骤

- 确定研究的知识领域
- 数据收集
- 研究前沿术语提取
- 时区分割
- 阈值选择
- 精简与合并
- 可视化显示
- 可视检测
- 关键点验证

CiteSpace 使用——文献检索/数据格式

CiteSpace数据来源

- **Web of Scienc**
- **CSSCI**(Chinese Social Science Citation Index)
- **Pubmed**
- **NSF**
- **Derwent**
- **Scopus**
- **arxiv e-Print**
- **CNKI**
- **SDSS**(*Sloan Digital Sky Survey*)

CiteSpace用的书目记录信息

A: Authors
B: Title, Descriptors, Abstract
C: Cited References
D: Times Cited
E: Year of Publication

CiteSpace用的共被引记录信息

```
AU Galea, S
   Ahern, J
   Kilpatrick, D
   Bucuvalas, M
```

→ co-authorship **A**

```
TI Psychological sequelae of the September 11
SO NEW ENGLAND JOURNAL OF MEDICINE
LA English
DT Article
ID POSTTRAUMATIC-STRESS-DISORDER; NATIONAL
AB Background: post-traumatic stress disorder
```

→ co-occurring burst terms **B**

```
OR GREEN BL, 1990, J APPL SOC
PSYCHOL, V20, P1033
   HANSON RF, 1995, J CONSULT CLIN
PSYCH, V63, P987
   HARVEY AG, 1999, J CONSULT CLIN
PSYCH, V67, P985
```

→ author co-citation **C**

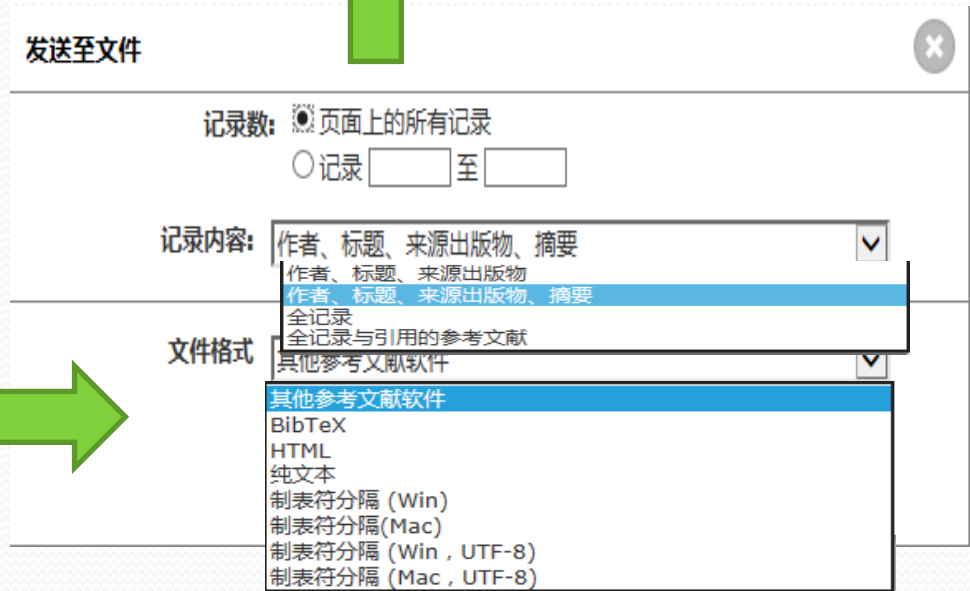
```
 KESSLER RC, 1995, ARCH GEN
PSYCHIAT, V52, P1048
   KILPATRICK DG, 1987, CRIME
MAZURE CM, 2000, AM J PSYCHIAT,
V157, P896
   NORTH CS, 1999, JAMA-J AM MED
ASSOC, V282, P755
```

→ document co-citation **C**

```
RESNICK H, 1999, J ANXIETY DISORD,
V13, P359
   RESNICK HS, 1993, J CONSULT CLIN
PSYCH, V61, P984
   ROTHBAUM BO, 1992, J TRAUMA
STRESS, V5, P455
```

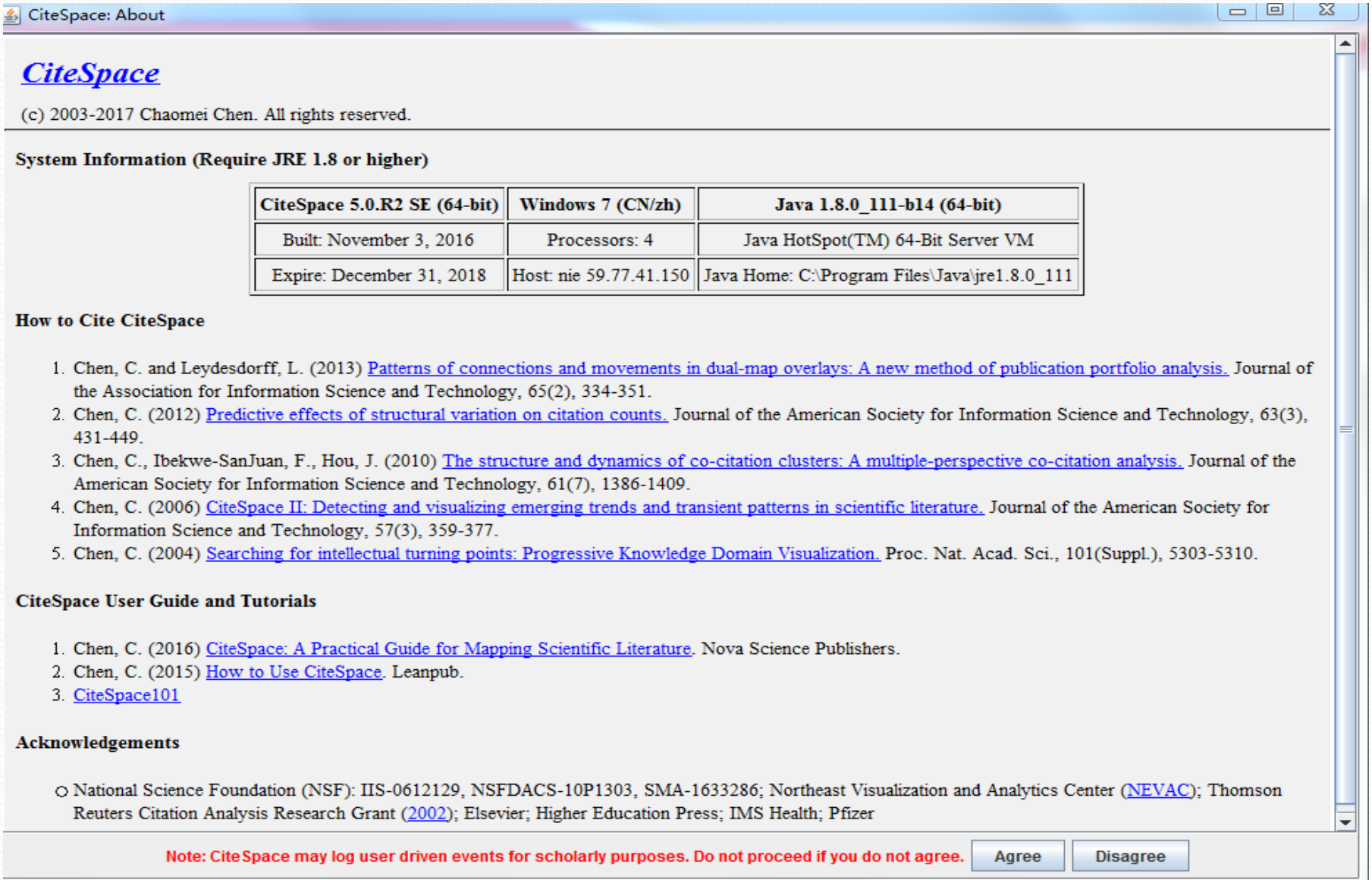
→ journal co-citation **C**

CiteSpace 使用——Web of Science

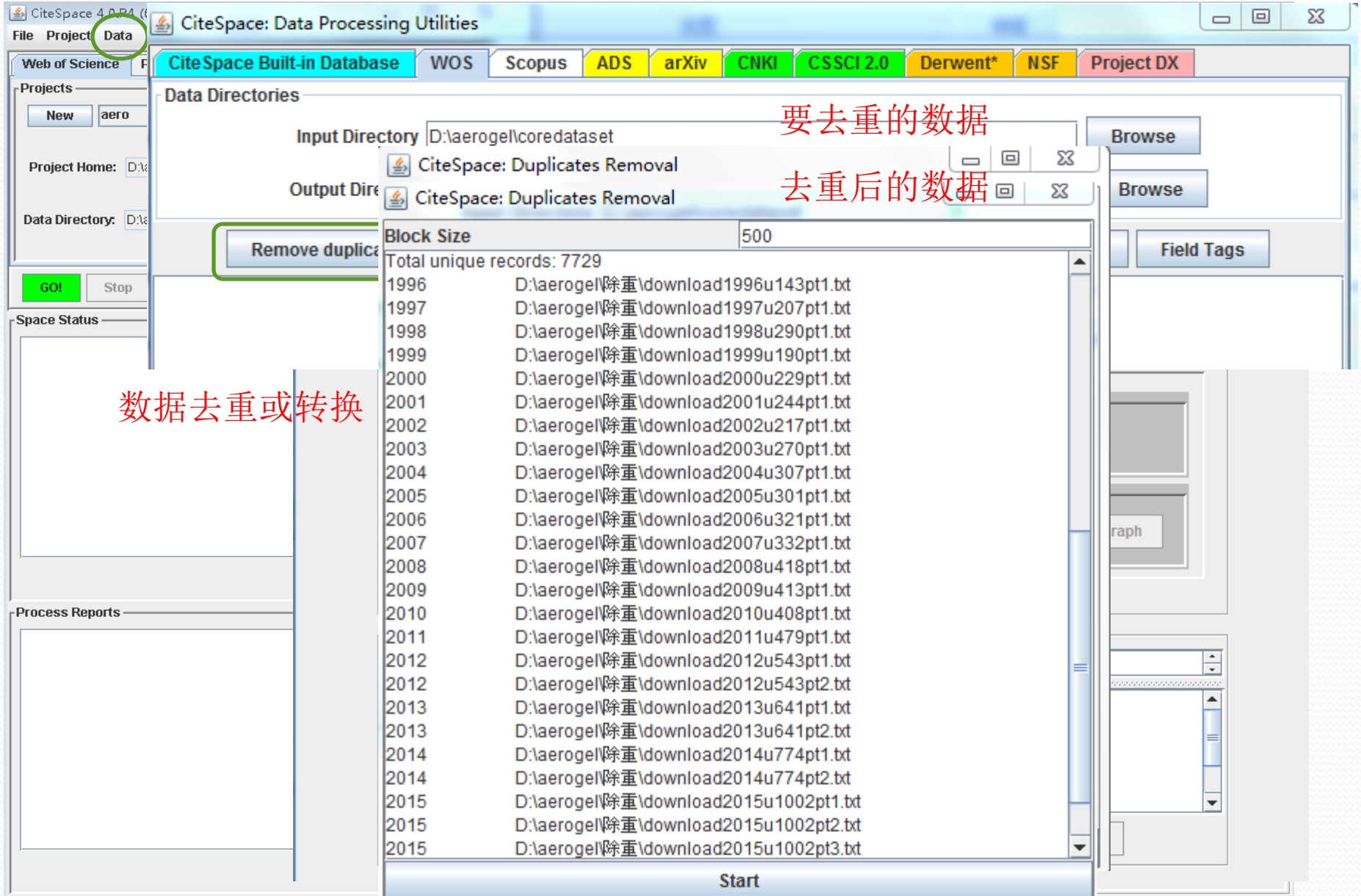


CiteSpace 使用——Web of Science

运行CiteSpace

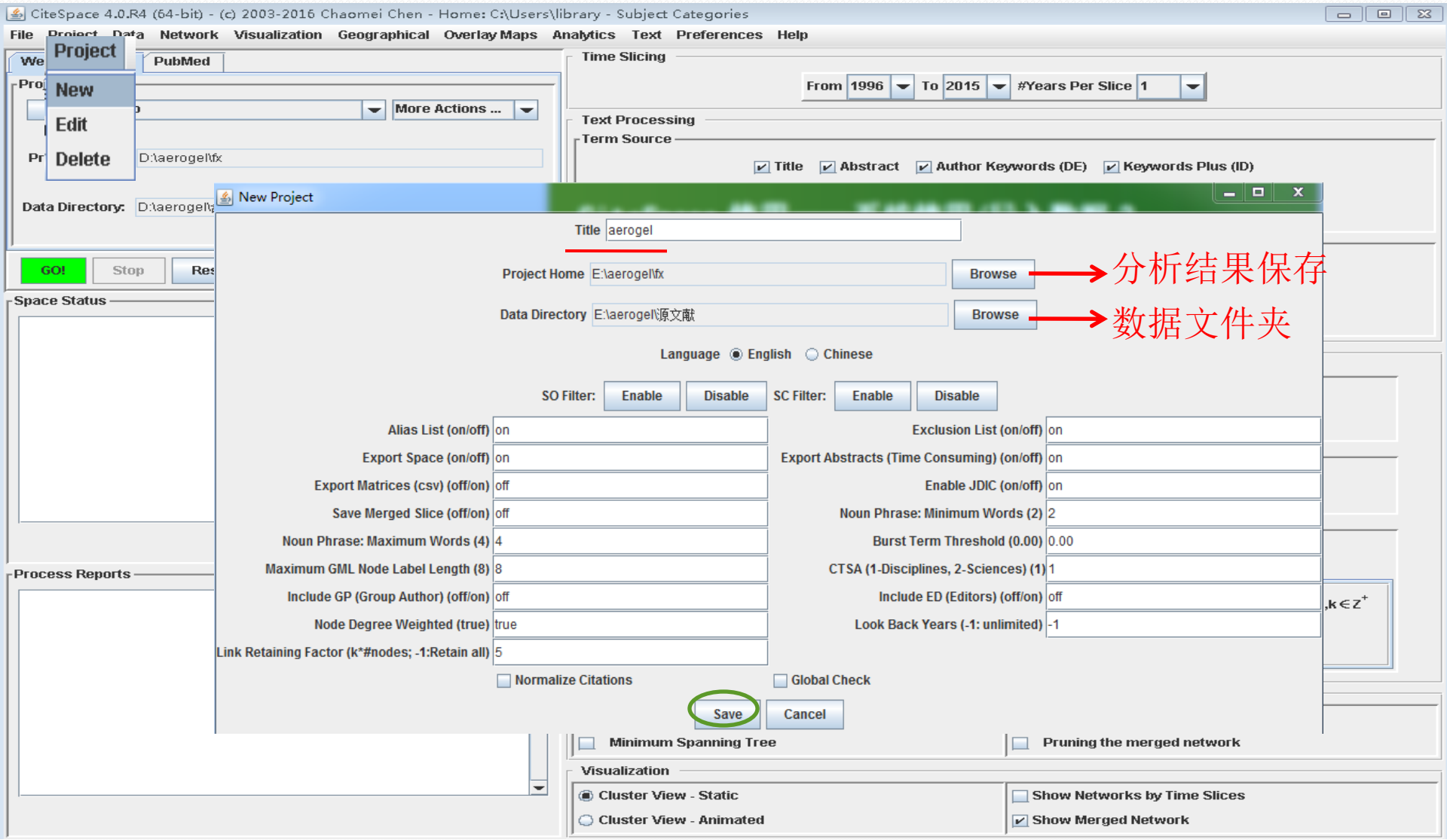


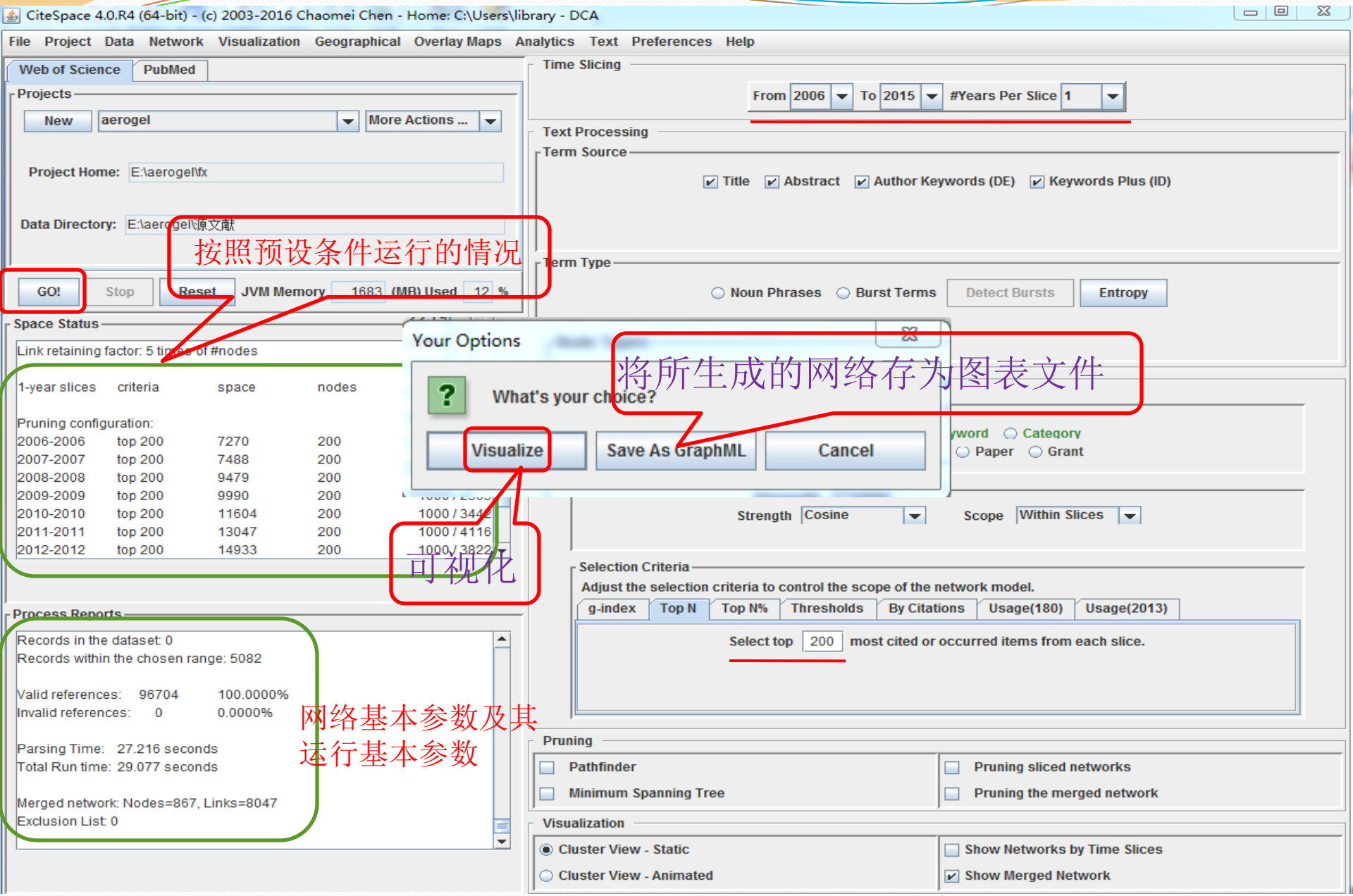
CiteSpace 使用——数据去重和格式转换



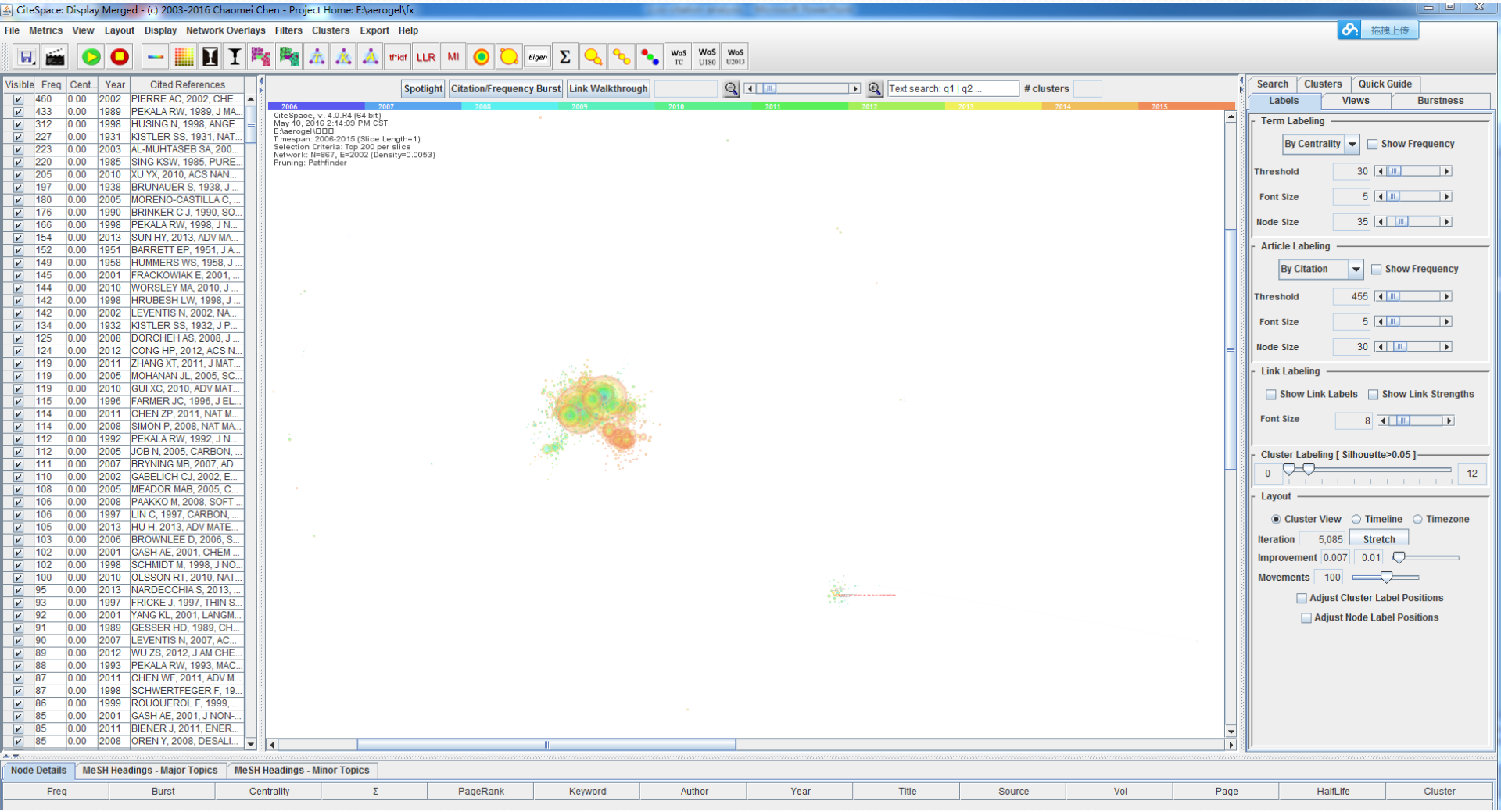

时间区域
时间切片
CiteSpace 4.0.R4 (64-bit) - (c) 2003-2016 Chaomei Chen - Home: C:\Users\library - Subject Categories
File Project Data Network Visualization Geographical Overlay Maps Analytics Text Preferences Help
Web of Science PubMed
Projects
New aero More Actions ...
Project Home: D:\aerogel\fx
Data Directory: D:\aerogel\合并除重
GO! Stop Reset JVM Memory 982 (MB) Used 7 %
Space Status
Process Reports
Time Slicing
From 1996 To 2015 #Years Per Slice 1
Text Processing
Term Source
聚类词来源
Title Abstract Author Keywords (DE) Keywords Plus (ID)
Term Type
聚类词类型
Noun Phrases Burst Terms Detect Bursts Entropy
Network Configuration
Node Types
Author Institution Country Term Keyword Category
Cited Reference Cited Author Cited Journal Paper Grant
节点类型
Links
Strength Cosine Scope Within Slices
阈值选择
Selection Criteria
Adjust the selection criteria to control the scope of the network model.
g-index Top N Top N% Thresholds By Citations Usage(180) Usage(2013)
The selection is based on a modified g-index of citations or occurences in each slice: $g^2 \leqslant k\Sigma_{i \leqslant g} c_i, k \in Z^+$
To include more or fewer nodes, increase or decrease the scale factor k here: k= 5
连线修剪
1、寻径
2、最小生成树
3、修剪切片网
4、修剪合并网
Pruning
Pathfinder
Minimum Spanning Tree
Pruning sliced networks
Pruning the merged network
视图显示形式
Visualization
Cluster View - Static
Cluster View - Animated
Show Networks by Time Slices
Show Merged Network

使用CiteSpace进行文献的共被引分析



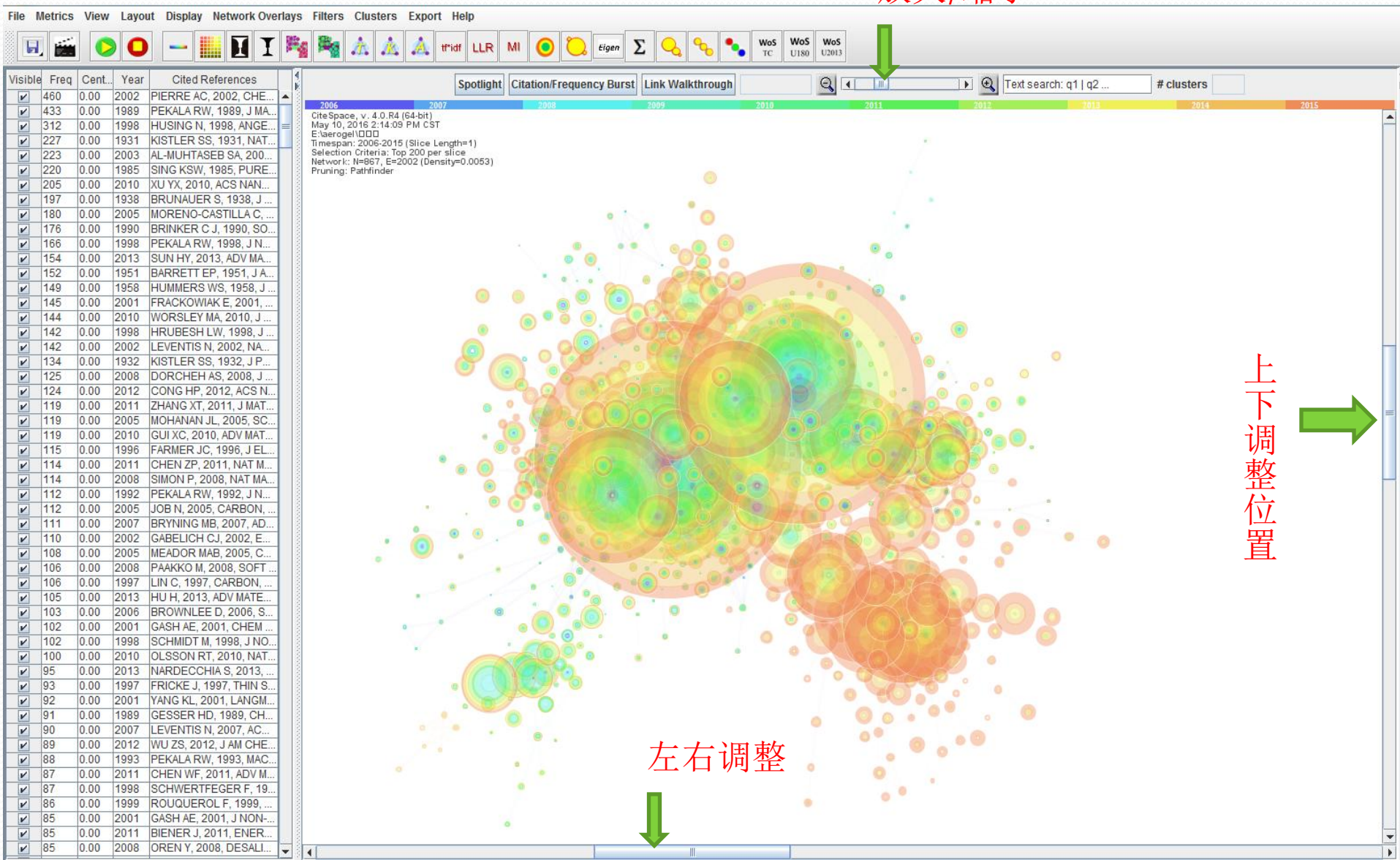

CiteSpace 4.0.R4 (64-bit) - (c) 2003-2016 Chaomei Chen - Home: C:\Users\library - DCA
File Project Data Network Visualization Geographical Overlay Maps Analytics Text Preferences Help
Web of Science PubMed
Projects
New aerogel More Actions ...
Project Home: E:\aerogel\fx
Data Directory: E:\aerogel\源文献
GO! Stop Reset JVM Memory 1683 (MB) Used 12 %
按照预设条件运行的情况
Time Slicing
From 2006 To 2015 #Years Per Slice 1
Text Processing
Term Source
Title Abstract Author Keywords (DE) Keywords Plus (ID)
Term Type
Noun Phrases Burst Terms Detect Bursts Entropy
Space Status
Link retaining factor: 5 times of #nodes
1-year slices criteria space nodes
Pruning configuration:
2006-2006 top 200 7270 200
2007-2007 top 200 7488 200
2008-2008 top 200 9479 200
2009-2009 top 200 9990 200
2010-2010 top 200 11604 200
2011-2011 top 200 13047 200
2012-2012 top 200 14933 200
Your Options
What's your choice?
Visualize
Save As GraphML
Cancel
将所生成的网络存为图表文件
可视化
Strength Cosine
Scope Within Slices
Selection Criteria
Adjust the selection criteria to control the scope of the network model.
g-index Top N Top N% Thresholds By Citations Usage(180) Usage(2013)
Select top 200 most cited or occurred items from each slice.
Process Reports
Records in the dataset: 0
Records within the chosen range: 5082
Valid references: 96704 100.0000%
Invalid references: 0 0.0000%
Parsing Time: 27.216 seconds
Total Run time: 29.077 seconds
Merged network: Nodes=867, Links=8047
Exclusion List: 0
网络基本参数及其运行基本参数
Pruning
Pathfinder
Minimum Spanning Tree
Pruning sliced networks
Pruning the merged network
Visualization
Cluster View - Static
Cluster View - Animated
Show Networks by Time Slices
Show Merged Network

可视化结果



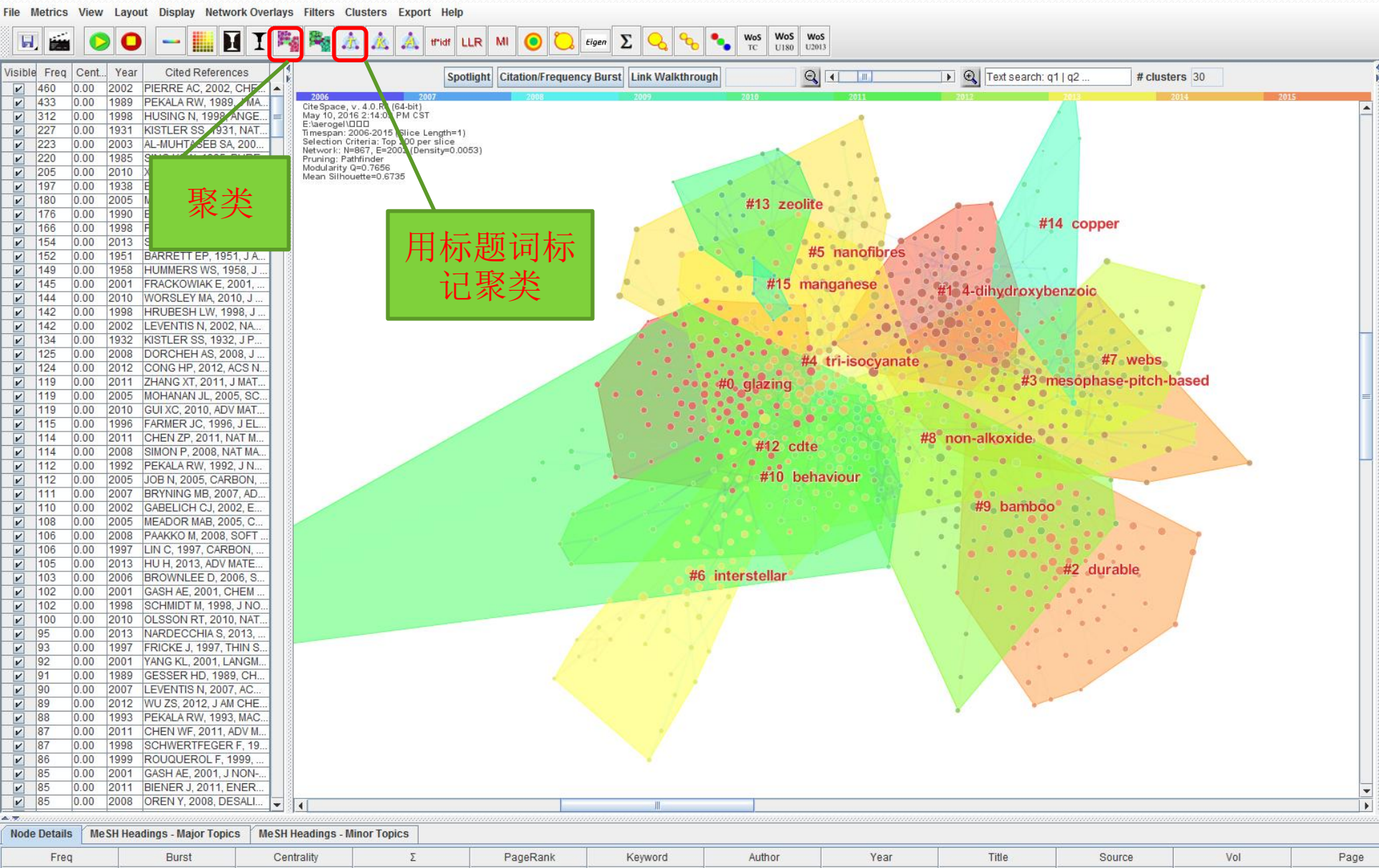
当网络布局稳定后背景会转成白色

可视化结果调整

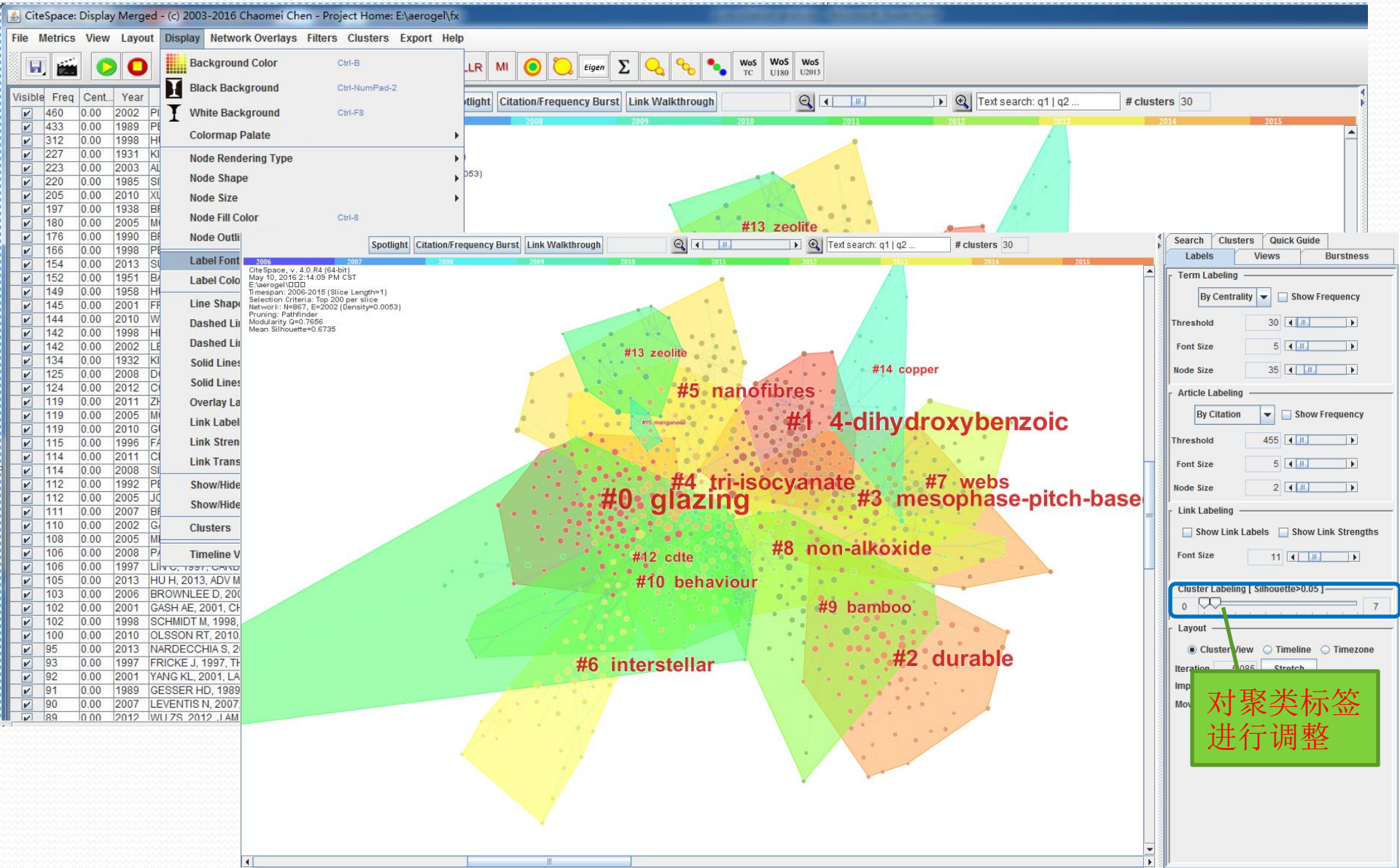


Visible	Freq	Cent...	Year	Cited References
✔	460	0.00	2002	PIERRE AC, 2002, CHE...
✔	433	0.00	1989	PEKALA RW, 1989, J MA...
✔	312	0.00	1998	HUSING N, 1998, ANGE...
✔	227	0.00	1931	KISTLER SS, 1931, NAT...
✔	223	0.00	2003	AL-MUHTASEB SA, 200...
✔	220	0.00	1985	SING KSW, 1985, PURE...
✔	205	0.00	2010	XU YX, 2010, ACS NAN...
✔	197	0.00	1938	BRUNAUER S, 1938, J ...
✔	180	0.00	2005	MORENO-CASTILLA C, ...
✔	176	0.00	1990	BRINKER C J, 1990, SO...
✔	166	0.00	1998	PEKALA RW, 1998, J N...
✔	154	0.00	2013	SUN HY, 2013, ADV MA...
✔	152	0.00	1951	BARRETT EP, 1951, J A...
✔	149	0.00	1958	HUMMERS WS, 1958, J ...
✔	145	0.00	2001	FRACKOWIAK E, 2001, ...
✔	144	0.00	2010	WORSLEY MA, 2010, J ...
✔	142	0.00	1998	HRUBESH LW, 1998, J ...
✔	142	0.00	2002	LEVENTIS N, 2002, NA...
✔	134	0.00	1932	KISTLER SS, 1932, J P...
✔	125	0.00	2008	DORCHEH AS, 2008, J ...
✔	124	0.00	2012	CONG HP, 2012, ACS N...
✔	119	0.00	2011	ZHANG XT, 2011, J MAT...
✔	119	0.00	2005	MOHANAN JL, 2005, SC...
✔	119	0.00	2010	GUI XC, 2010, ADV MAT...
✔	115	0.00	1996	FARMER JC, 1996, J EL...
✔	114	0.00	2011	CHEN ZP, 2011, NAT M...
✔	114	0.00	2008	SIMON P, 2008, NAT MA...
✔	112	0.00	1992	PEKALA RW, 1992, J N...
✔	112	0.00	2005	JOB N, 2005, CARBON, ...
✔	111	0.00	2007	BRYNING MB, 2007, AD...
✔	110	0.00	2002	GABELICH CJ, 2002, E...
✔	108	0.00	2005	MEADOR MAB, 2005, C...
✔	106	0.00	2008	PAAKKO M, 2008, SOFT ...
✔	106	0.00	1997	LIN C, 1997, CARBON, ...
✔	105	0.00	2013	HU H, 2013, ADV MATE...
✔	103	0.00	2006	BROWNLEE D, 2006, S...
✔	102	0.00	2001	GASH AE, 2001, CHEM ...
✔	102	0.00	1998	SCHMIDT M, 1998, J NO...
✔	100	0.00	2010	OLSSON RT, 2010, NAT...
✔	95	0.00	2013	NARDECCHIA S, 2013, ...
✔	93	0.00	1997	FRICKE J, 1997, THIN S...
✔	92	0.00	2001	YANG KL, 2001, LANGM...
✔	91	0.00	1989	GESSER HD, 1989, CH...
✔	90	0.00	2007	LEVENTIS N, 2007, AC...
✔	89	0.00	2012	WU ZS, 2012, J AM CHE...
✔	88	0.00	1993	PEKALA RW, 1993, MAC...
✔	87	0.00	2011	CHEN WF, 2011, ADV M...
✔	87	0.00	1998	SCHWERTFEGER F, 19...
✔	86	0.00	1999	ROUQUEROL F, 1999, ...
✔	85	0.00	2001	GASH AE, 2001, J NON-...
✔	85	0.00	2011	BIENER J, 2011, ENER...
✔	85	0.00	2008	OREN Y, 2008, DESALI...

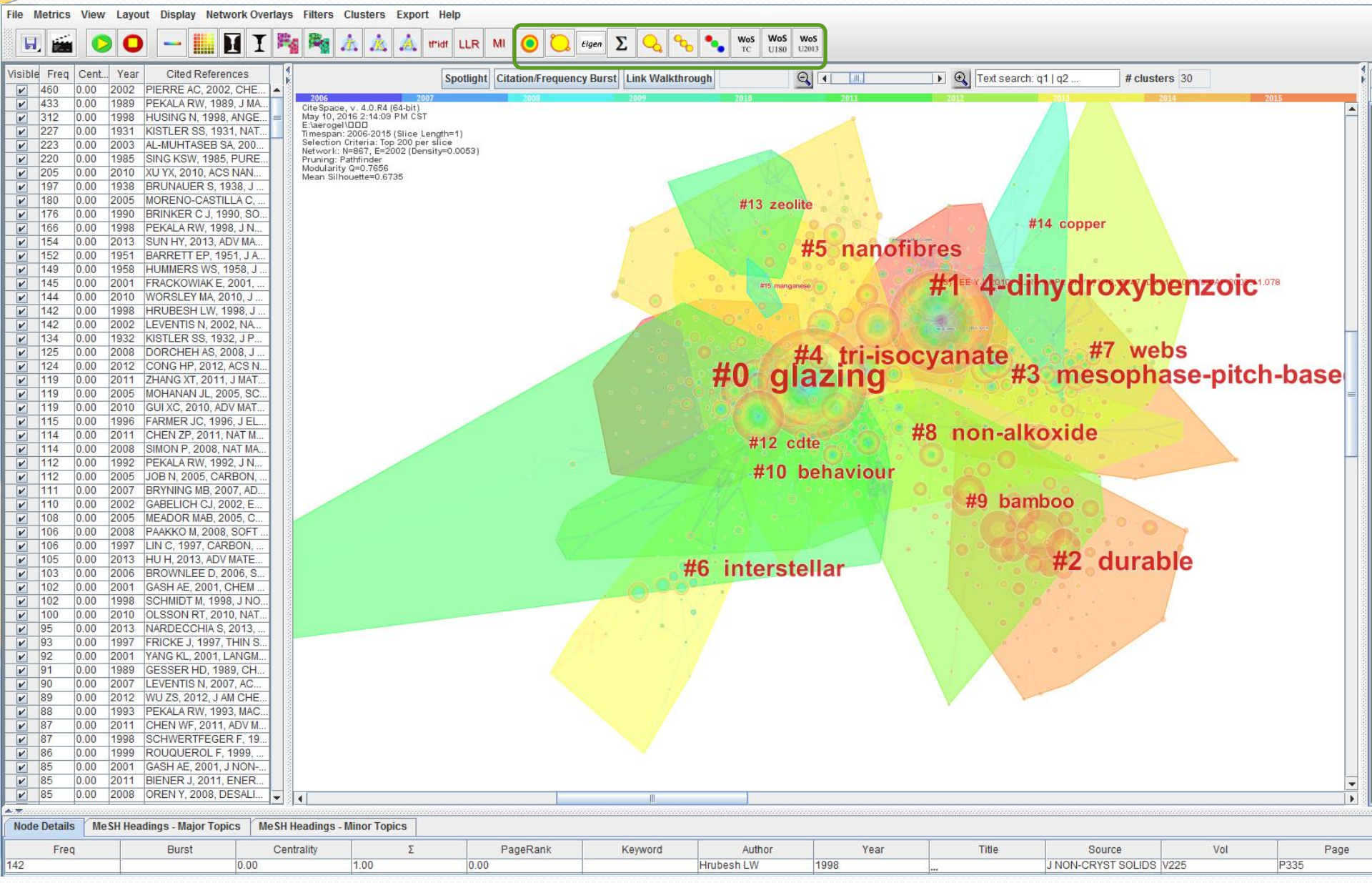
对共被引网络进行聚类


File Metrics View Layout Display Network Overlays Filters Clusters Export Help
聚类
用标题词标记聚类
Spotlight
Citation/Frequency Burst
Link Walkthrough
Text search: q1 | q2 ...
clusters 30
#13 zeolite
#14 copper
#5 nanofibres
#15 manganese
#1 4-dihydroxybenzoic
#4 tri-isocyanate
#7 webs
#0 glazing
#3 mesophase-pitch-based
#12 cdte
#8 non-alkoxide
#10 behaviour
#9 bamboo
#6 interstellar
#2 durable
Node Details
MeSH Headings - Major Topics
MeSH Headings - Minor Topics
Freq
Burst
Centrality
Σ
PageRank
Keyword
Author
Year
Title
Source
Vol
Page

对聚类的标签进行调整（按照聚类规模进行显示）



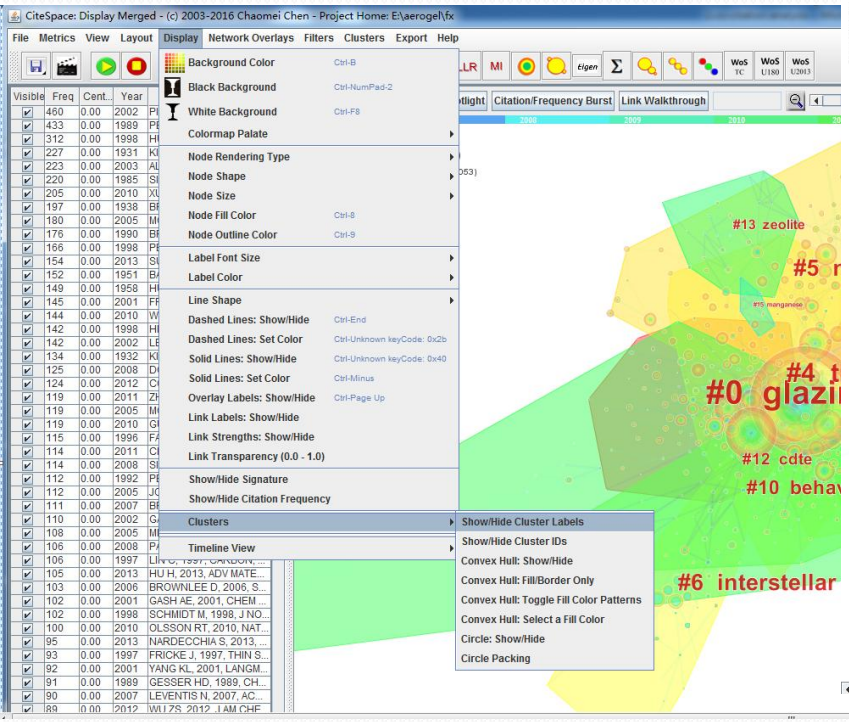
对节点属性进行调整

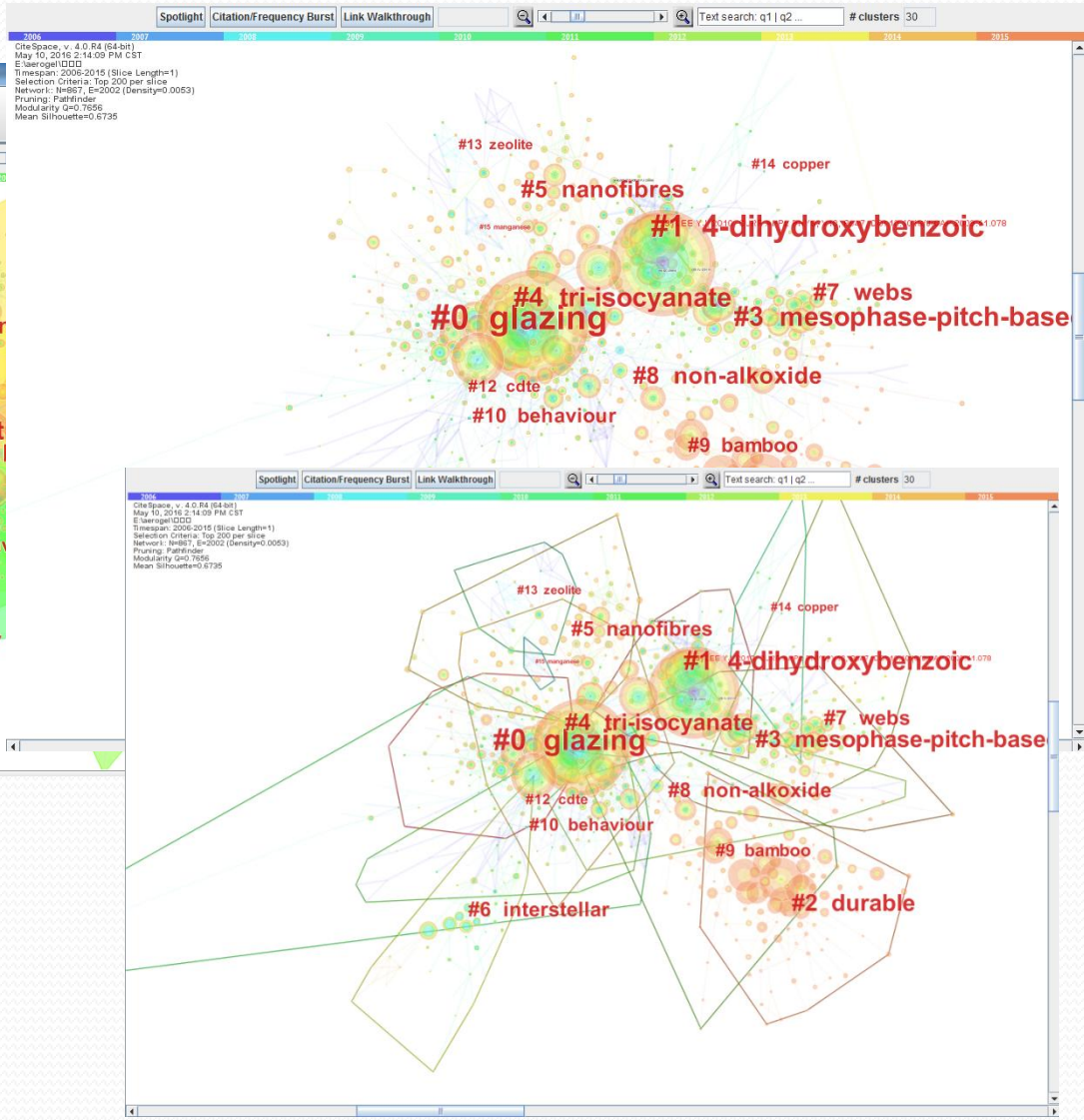


Visible	Freq	Cent...	Year	Cited References
☑	460	0.00	2002	PIERRE AC, 2002, CHE...
☑	433	0.00	1989	PEKALA RW, 1989, J MA...
☑	312	0.00	1998	HUSING N, 1998, ANGE...
☑	227	0.00	1931	KISTLER SS, 1931, NAT...
☑	223	0.00	2003	AL-MUHTASEB SA, 200...
☑	220	0.00	1985	SING KSW, 1985, PURE...
☑	205	0.00	2010	XU YX, 2010, ACS NAN...
☑	197	0.00	1938	BRUNAUER S, 1938, J ...
☑	180	0.00	2005	MORENO-CASTILLA C, ...
☑	176	0.00	1990	BRINKER C J, 1990, SO...
☑	166	0.00	1998	PEKALA RW, 1998, J N...
☑	154	0.00	2013	SUN HY, 2013, ADV MA...
☑	152	0.00	1951	BARRETT EP, 1951, J A...
☑	149	0.00	1958	HUMMERS WS, 1958, J ...
☑	145	0.00	2001	FRACKOWIAK E, 2001, ...
☑	144	0.00	2010	WORSLEY MA, 2010, J ...
☑	142	0.00	1998	HRUBESH LW, 1998, J ...
☑	142	0.00	2002	LEVENTIS N, 2002, NA...
☑	134	0.00	1932	KISTLER SS, 1932, J P...
☑	125	0.00	2008	DORCHEH AS, 2008, J ...
☑	124	0.00	2012	CONG HP, 2012, ACS N...
☑	119	0.00	2011	ZHANG XT, 2011, J MAT...
☑	119	0.00	2005	MOHANAN JL, 2005, SC...
☑	119	0.00	2010	GUI XC, 2010, ADV MAT...
☑	115	0.00	1996	FARMER JC, 1996, J EL...
☑	114	0.00	2011	CHEN ZP, 2011, NAT M...
☑	114	0.00	2008	SIMON P, 2008, NAT MA...
☑	112	0.00	1992	PEKALA RW, 1992, J N...
☑	112	0.00	2005	JOB N, 2005, CARBON, ...
☑	111	0.00	2007	BRYNING MB, 2007, AD...
☑	110	0.00	2002	GABELICH CJ, 2002, E...
☑	108	0.00	2005	MEADOR MAB, 2005, C...
☑	106	0.00	2008	PAAKKO M, 2008, SOFT ...
☑	106	0.00	1997	LIN C, 1997, CARBON, ...
☑	105	0.00	2013	HU H, 2013, ADV MATE...
☑	103	0.00	2006	BROWNLEE D, 2006, S...
☑	102	0.00	2001	GASH AE, 2001, CHEM ...
☑	102	0.00	1998	SCHMIDT M, 1998, J NO...
☑	100	0.00	2010	OLSSON RT, 2010, NAT...
☑	95	0.00	2013	NARDECCHIA S, 2013, ...
☑	93	0.00	1997	FRICKE J, 1997, THIN S...
☑	92	0.00	2001	YANG KL, 2001, LANGM...
☑	91	0.00	1989	GESSER HD, 1989, CH...
☑	90	0.00	2007	LEVENTIS N, 2007, AC...
☑	89	0.00	2012	WU ZS, 2012, J AM CHE...
☑	88	0.00	1993	PEKALA RW, 1993, MAC...
☑	87	0.00	2011	CHEN WF, 2011, ADV M...
☑	87	0.00	1998	SCHWERTFEGER F, 19...
☑	86	0.00	1999	ROUQUEROL F, 1999, ...
☑	85	0.00	2001	GASH AE, 2001, J NON-...
☑	85	0.00	2011	BIENER J, 2011, ENER...
☑	85	0.00	2008	OREN Y, 2008, DESALI...

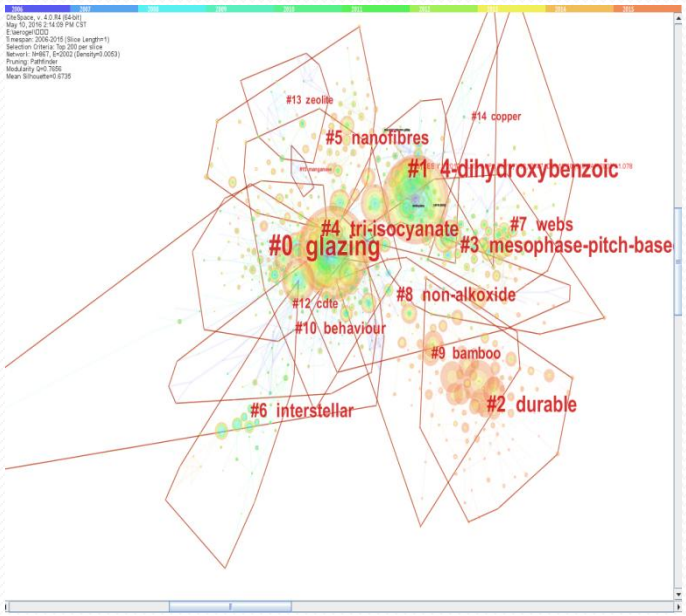
Freq	Burst	Centrality	Σ	PageRank	Keyword	Author	Year	Title	Source	Vol	Page
142		0.00	1.00	0.00		Hrubesh LW	1998	...	J NON-CRYST SOLIDS	V225	P335

对聚类的轮廓显示进行调整

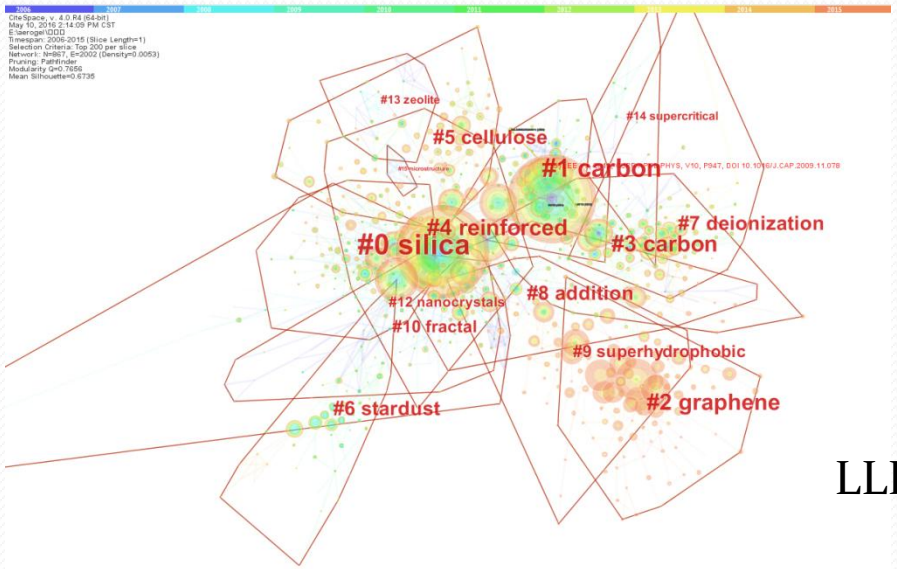




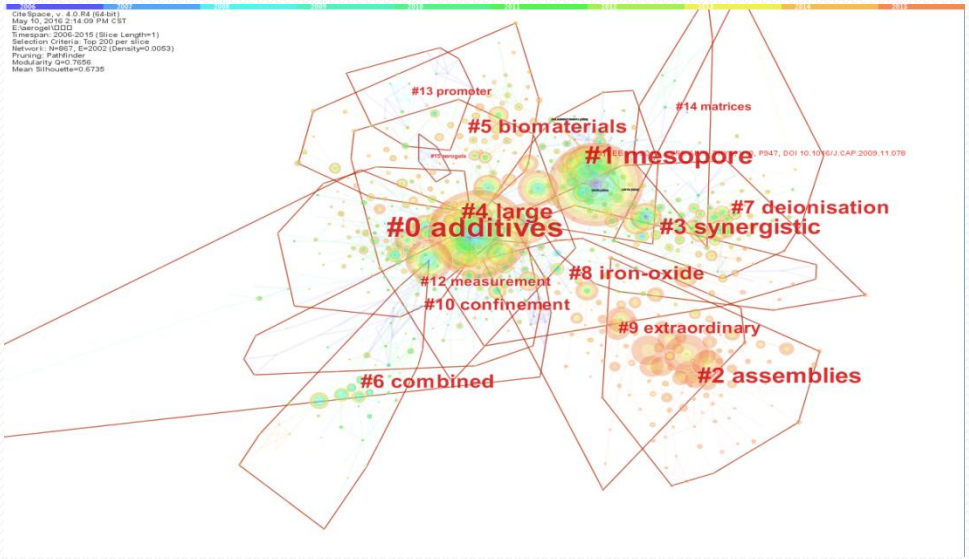
得到较为满意的图谱后，使用不同的方法对聚类进行命名。通常情况下陈教授推荐使用LLR算法得到的结果，下面是三种算法 tf*idf LLR MI 得到结果的比较。



Tf*idf

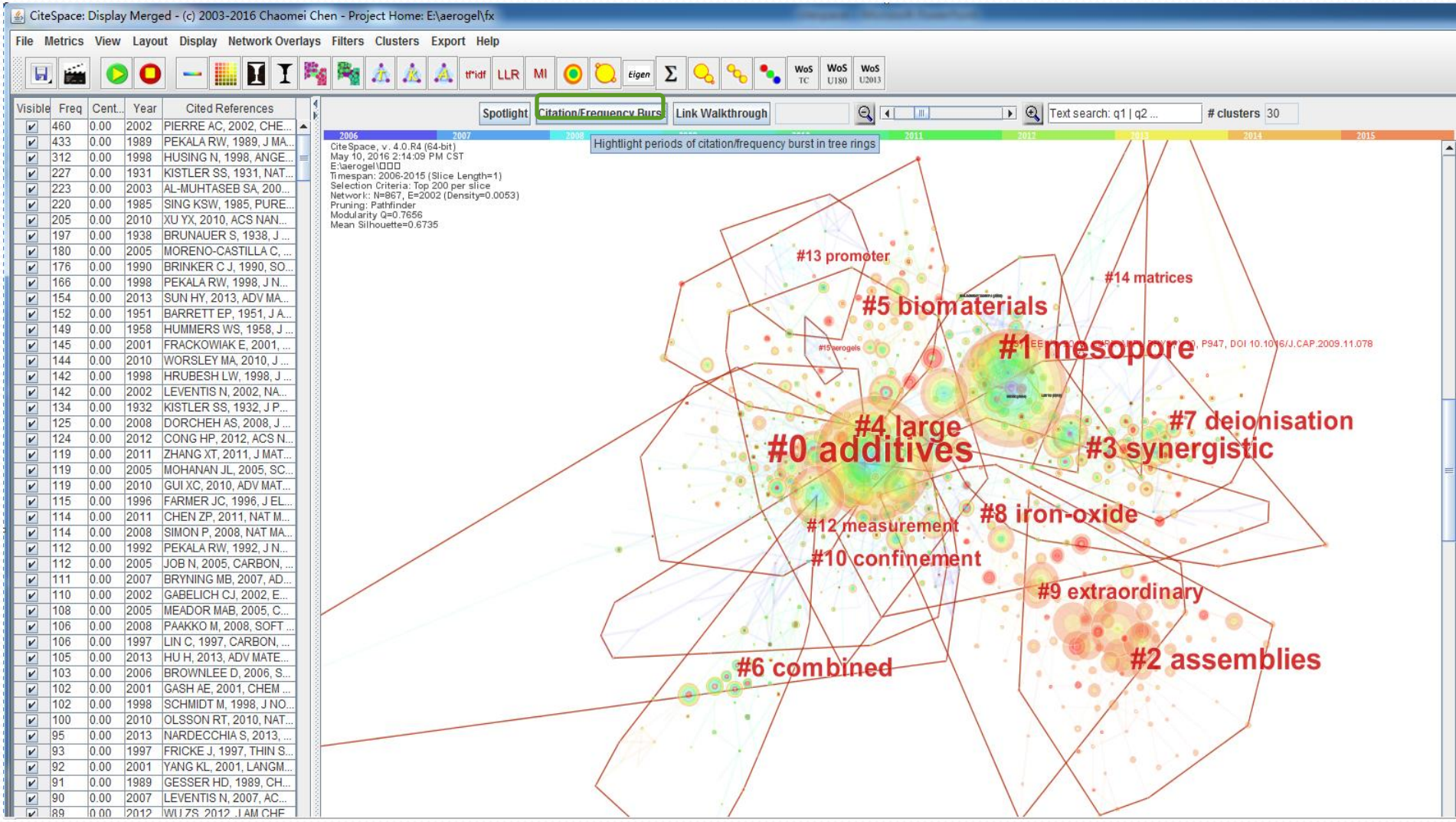


LLR

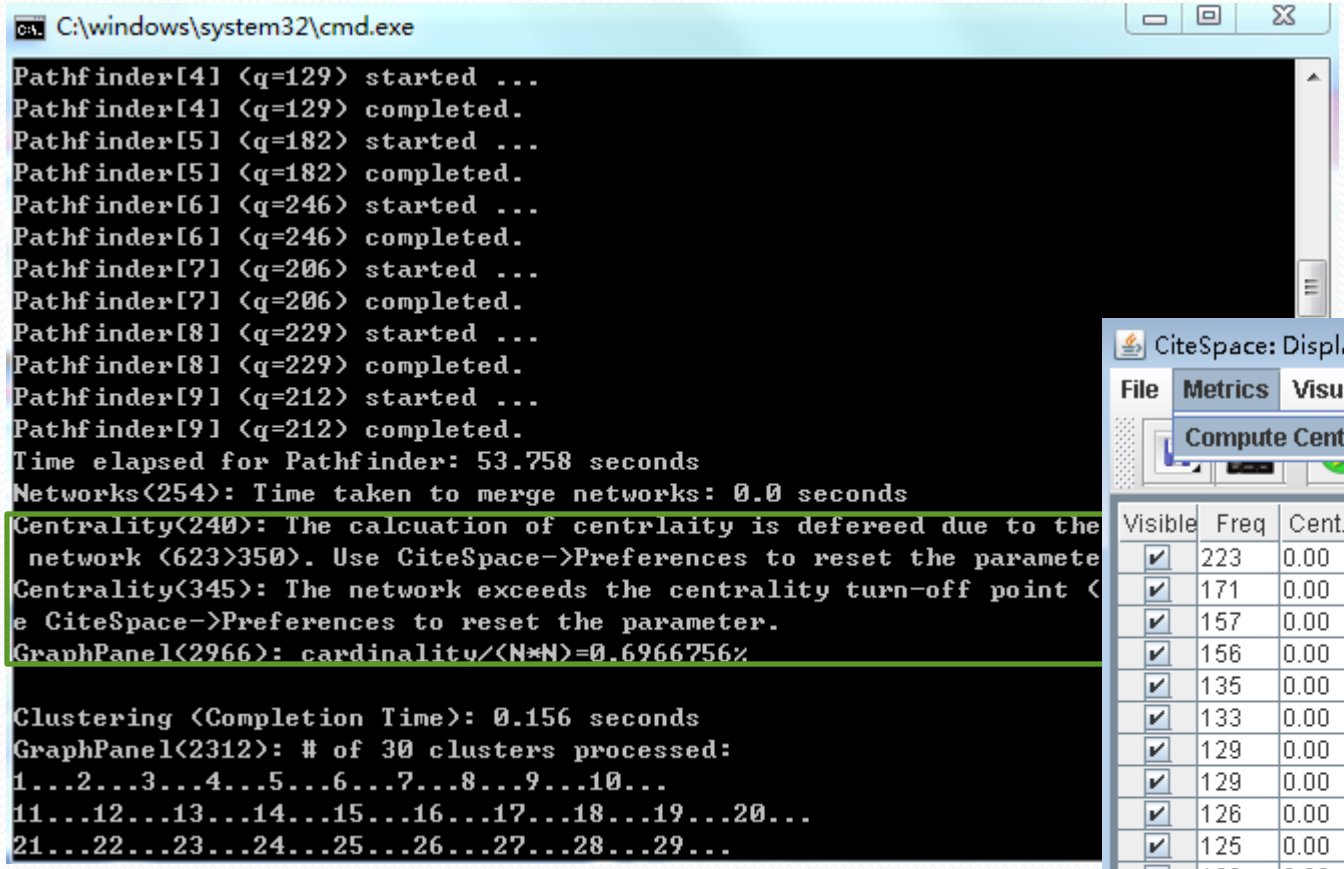


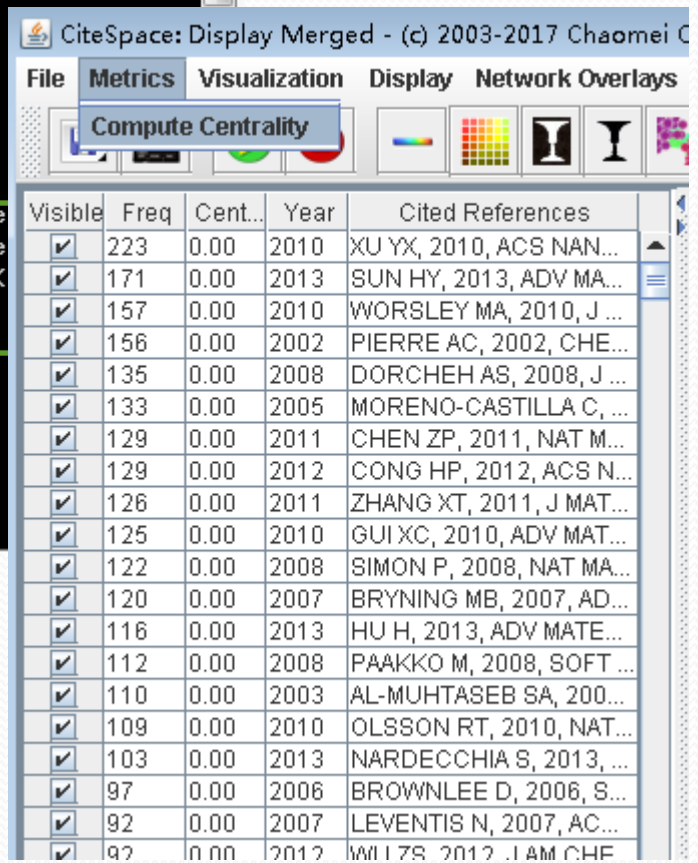
MI

对文献的突发性进行检测

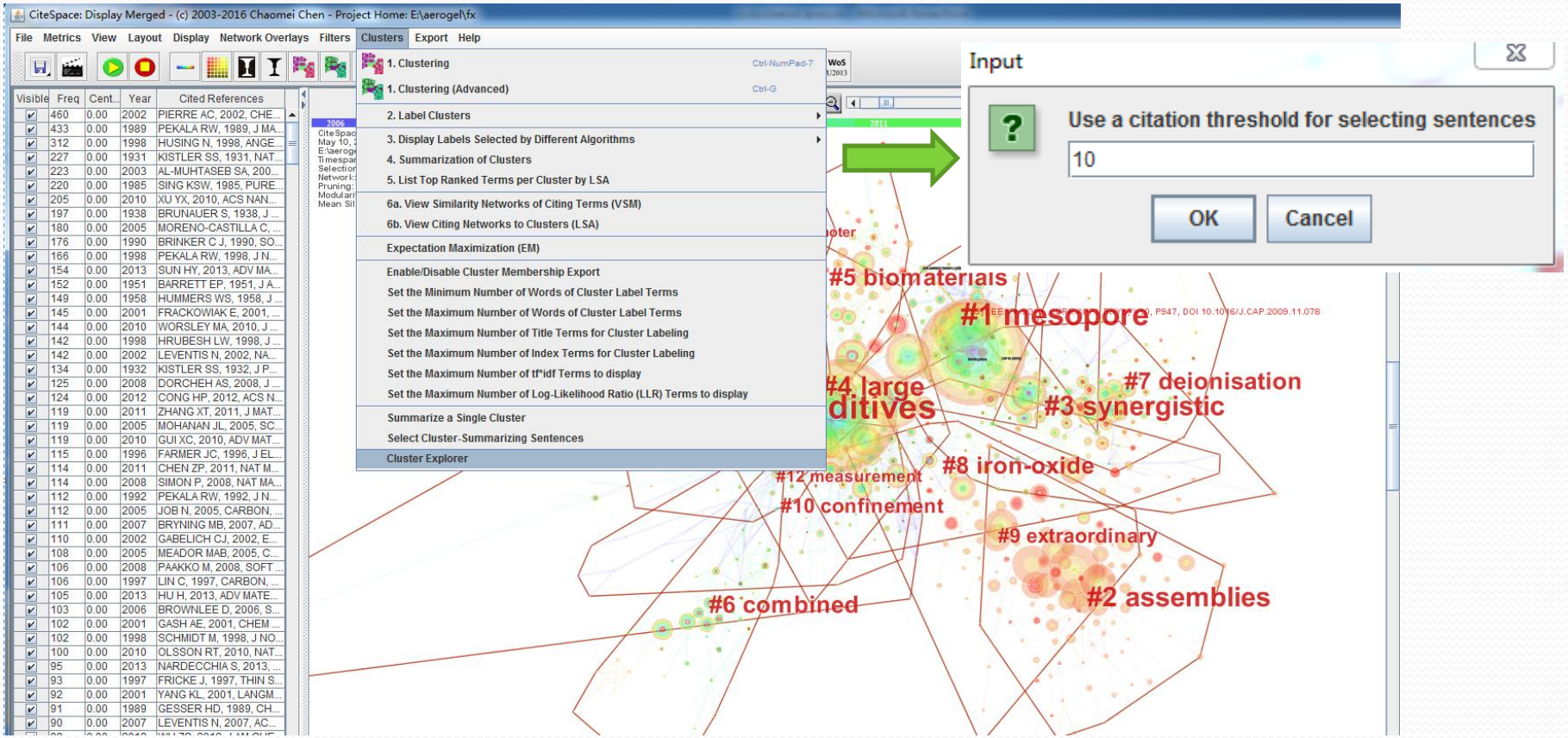


计算中介中心性值

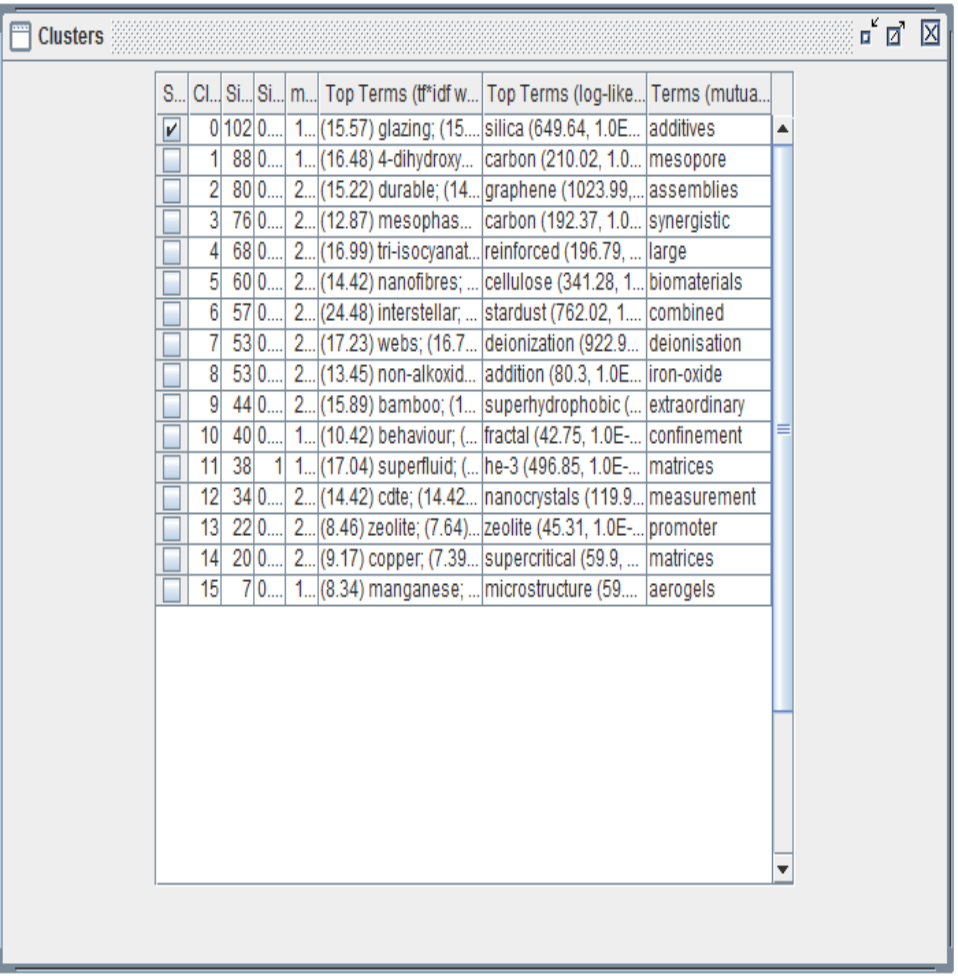

C:\windows\system32\cmd.exe
Pathfinder[4] (q=129) started ...
Pathfinder[4] (q=129) completed.
Pathfinder[5] (q=182) started ...
Pathfinder[5] (q=182) completed.
Pathfinder[6] (q=246) started ...
Pathfinder[6] (q=246) completed.
Pathfinder[7] (q=206) started ...
Pathfinder[7] (q=206) completed.
Pathfinder[8] (q=229) started ...
Pathfinder[8] (q=229) completed.
Pathfinder[9] (q=212) started ...
Pathfinder[9] (q=212) completed.
Time elapsed for Pathfinder: 53.758 seconds
Networks(254): Time taken to merge networks: 0.0 seconds
Centrality(240): The calcuation of centrlaity is defereed due to the
network (623>350). Use CiteSpace->Preferences to reset the paramete
Centrality(345): The network exceeds the centrality turn-off point (
e CiteSpace->Preferences to reset the parameter.
GraphPanel(2966): cardinality/(N*N)=0.6966756%
Clustering (Completion Time): 0.156 seconds
GraphPanel(2312): # of 30 clusters processed:
1...2...3...4...5...6...7...8...9...10...
11...12...13...14...15...16...17...18...19...20...
21...22...23...24...25...26...27...28...29...


CiteSpace: Display Merged - (c) 2003-2017 Chaomei C
File
Metrics
Visualization
Display
Network Overlays
Compute Centrality
Visible
Freq
Cent...
Year
Cited References
223 0.00 2010 XU YX, 2010, ACS NAN...
171 0.00 2013 SUN HY, 2013, ADV MA...
157 0.00 2010 WORSLEY MA, 2010, J ...
156 0.00 2002 PIERRE AC, 2002, CHE...
135 0.00 2008 DORCHEH AS, 2008, J ...
133 0.00 2005 MORENO-CASTILLA C, ...
129 0.00 2011 CHEN ZP, 2011, NAT M...
129 0.00 2012 CONG HP, 2012, ACS N...
126 0.00 2011 ZHANG XT, 2011, J MAT...
125 0.00 2010 GUI XC, 2010, ADV MAT...
122 0.00 2008 SIMON P, 2008, NAT MA...
120 0.00 2007 BRYNING MB, 2007, AD...
116 0.00 2013 HU H, 2013, ADV MATE...
112 0.00 2008 PAAKKO M, 2008, SOFT ...
110 0.00 2003 AL-MUHTASEB SA, 200...
109 0.00 2010 OLSSON RT, 2010, NAT...
103 0.00 2013 NARDECCHIA S, 2013, ...
97 0.00 2006 BROWNLEE D, 2006, S...
92 0.00 2007 LEVENTIS N, 2007, AC...

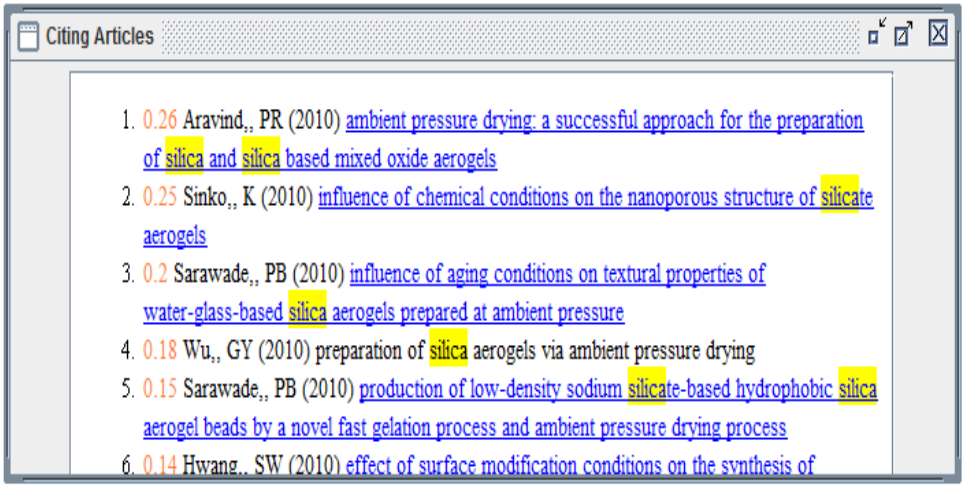
对聚类详细信息查询


CiteSpace: Display Merged - (c) 2003-2016 Chaomei Chen - Project Home: E:\aerogel\fx
File Metrics View Layout Display Network Overlays Filters Clusters Export Help
1. Clustering Ctrl-NumPad-7
1. Clustering (Advanced) Ctrl-G
2. Label Clusters
3. Display Labels Selected by Different Algorithms
4. Summarization of Clusters
5. List Top Ranked Terms per Cluster by LSA
6a. View Similarity Networks of Citing Terms (VSM)
6b. View Citing Networks to Clusters (LSA)
Expectation Maximization (EM)
Enable/Disable Cluster Membership Export
Set the Minimum Number of Words of Cluster Label Terms
Set the Maximum Number of Words of Cluster Label Terms
Set the Maximum Number of Title Terms for Cluster Labeling
Set the Maximum Number of Index Terms for Cluster Labeling
Set the Maximum Number of tf*idf Terms to display
Set the Maximum Number of Log-Likelihood Ratio (LLR) Terms to display
Summarize a Single Cluster
Select Cluster-Summarizing Sentences
Cluster Explorer
Input
Use a citation threshold for selecting sentences
10
OK
Cancel
#5 biomaterials
#1 mesopore
#4 large
ditives
#7 deionisation
#3 synergistic
#8 iron-oxide
#12 measurement
#10 confinement
#9 extraordinary
#2 assemblies
#6 combined

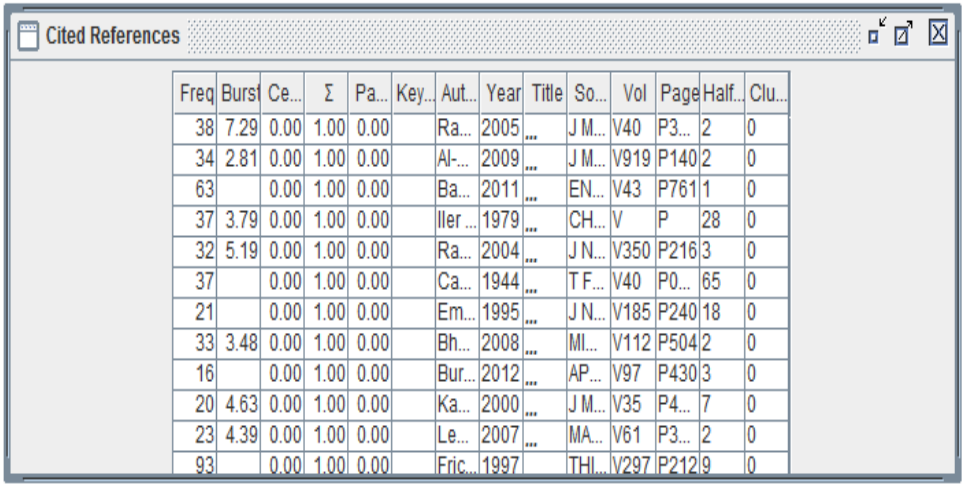
以下将对获得的三个重要的窗口进行解释



S...	Cl...	Si...	Si...	m...	Top Terms (tf*idf w...	Top Terms (log-like...	Terms (mutua...
✔	0	102	0....	1...	(15.57) glazing; (15....	silica (649.64, 1.0E...	additives
	1	88	0....	1...	(16.48) 4-dihydroxy...	carbon (210.02, 1.0...	mesopore
	2	80	0....	2...	(15.22) durable; (14...	graphene (1023.99,...	assemblies
	3	76	0....	2...	(12.87) mesophas...	carbon (192.37, 1.0...	synergistic
	4	68	0....	2...	(16.99) tri-isocyanat...	reinforced (196.79, ...	large
	5	60	0....	2...	(14.42) nanofibres; ...	cellulose (341.28, 1...	biomaterials
	6	57	0....	2...	(24.48) interstellar; ...	stardust (762.02, 1....	combined
	7	53	0....	2...	(17.23) webs; (16.7...	deionization (922.9...	deionisation
	8	53	0....	2...	(13.45) non-alkoxid...	addition (80.3, 1.0E...	iron-oxide
	9	44	0....	2...	(15.89) bamboo; (1...	superhydrophobic (...	extraordinary
	10	40	0....	1...	(10.42) behaviour; (...	fractal (42.75, 1.0E-...	confinement
	11	38	1	1...	(17.04) superfluid; (...	he-3 (496.85, 1.0E-...	matrices
	12	34	0....	2...	(14.42) cdte; (14.42...	nanocrystals (119.9...	measurement
	13	22	0....	2...	(8.46) zeolite; (7.64)...	zeolite (45.31, 1.0E-...	promoter
	14	20	0....	2...	(9.17) copper; (7.39...	supercritical (59.9, ...	matrices
	15	7	0....	1...	(8.34) manganese; ...	microstructure (59....	aerogels

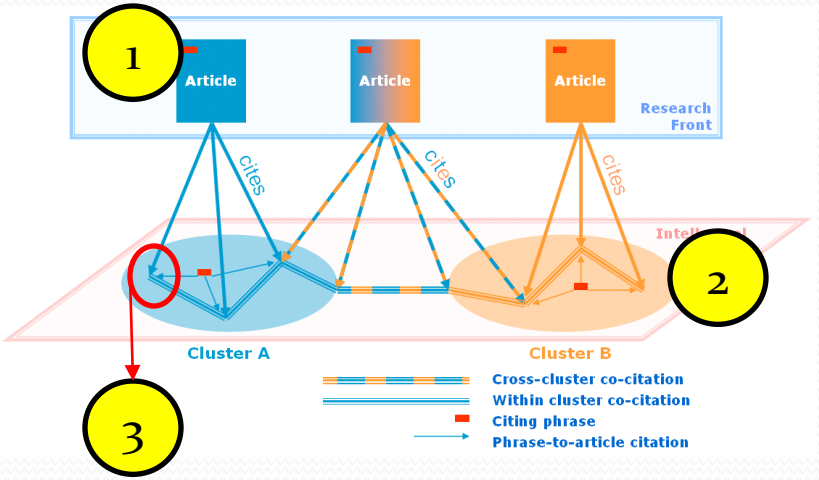


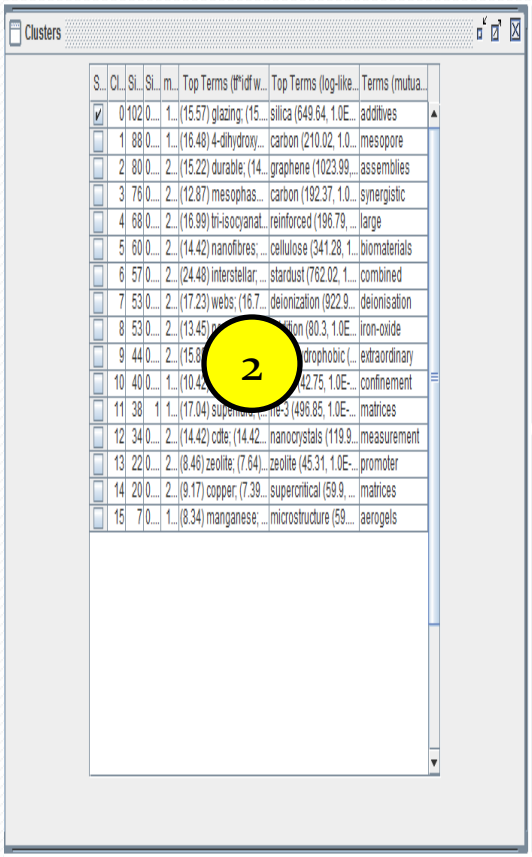
1. 0.26 Aravind,, PR (2010) ambient pressure drying: a successful approach for the preparation of silica and silica based mixed oxide aerogels
2. 0.25 Sinko,, K (2010) influence of chemical conditions on the nanoporous structure of silicate aerogels
3. 0.2 Sarawade,, PB (2010) influence of aging conditions on textural properties of water-glass-based silica aerogels prepared at ambient pressure
4. 0.18 Wu,, GY (2010) preparation of silica aerogels via ambient pressure drying
5. 0.15 Sarawade,, PB (2010) production of low-density sodium silicate-based hydrophobic silica aerogel beads by a novel fast gelation process and ambient pressure drying process
6. 0.14 Hwang,, SW (2010) effect of surface modification conditions on the synthesis of

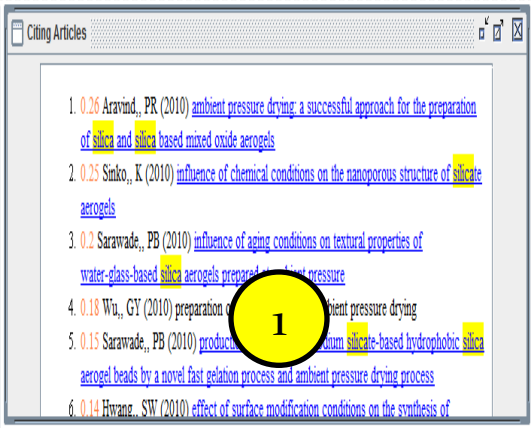


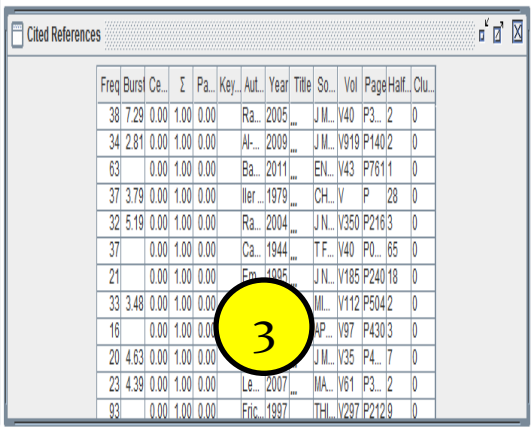
Freq	Burst	Ce...	Σ	Pa...	Key...	Aut...	Year	Title	So...	Vol	Page	Half...	Clu...
38	7.29	0.00	1.00	0.00		Ra...	2005	...	J M...	V40	P3...	2	0
34	2.81	0.00	1.00	0.00		Al-...	2009	...	J M...	V919	P140	2	0
63		0.00	1.00	0.00		Ba...	2011	...	EN...	V43	P761	1	0
37	3.79	0.00	1.00	0.00		Iler ...	1979	...	CH...	V	P	28	0
32	5.19	0.00	1.00	0.00		Ra...	2004	...	J N...	V350	P216	3	0
37		0.00	1.00	0.00		Ca...	1944	...	T F...	V40	P0...	65	0
21		0.00	1.00	0.00		Em...	1995	...	J N...	V185	P240	18	0
33	3.48	0.00	1.00	0.00		Bh...	2008	...	MI...	V112	P504	2	0
16		0.00	1.00	0.00		Bur...	2012	...	AP...	V97	P430	3	0
20	4.63	0.00	1.00	0.00		Ka...	2000	...	J M...	V35	P4...	7	0
23	4.39	0.00	1.00	0.00		Le...	2007	...	MA...	V61	P3...	2	0
93		0.00	1.00	0.00		Fric...	1997		THI...	V297	P212	9	0

CiteSpace概念模型与软件提供的信息查询比较

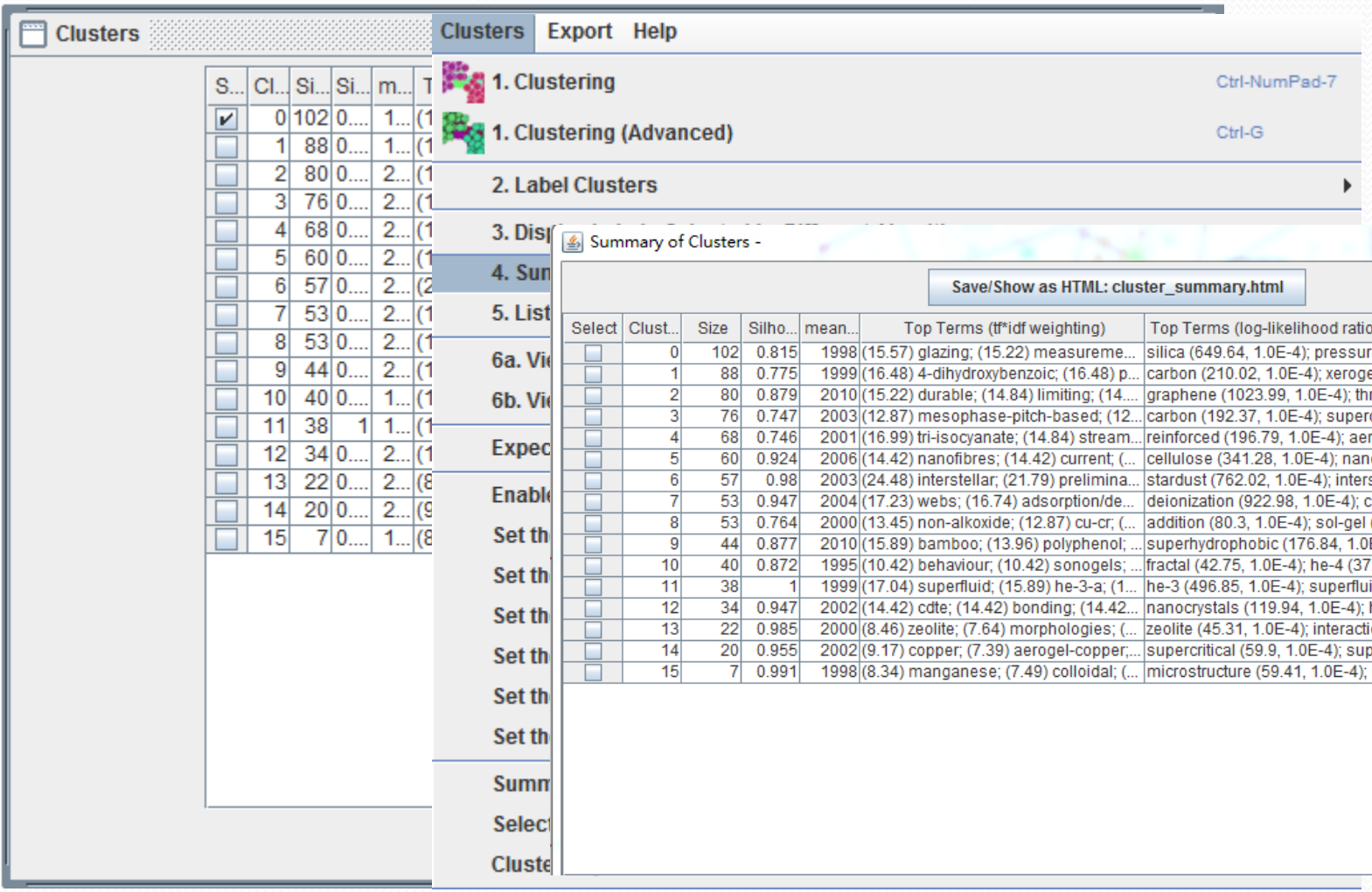








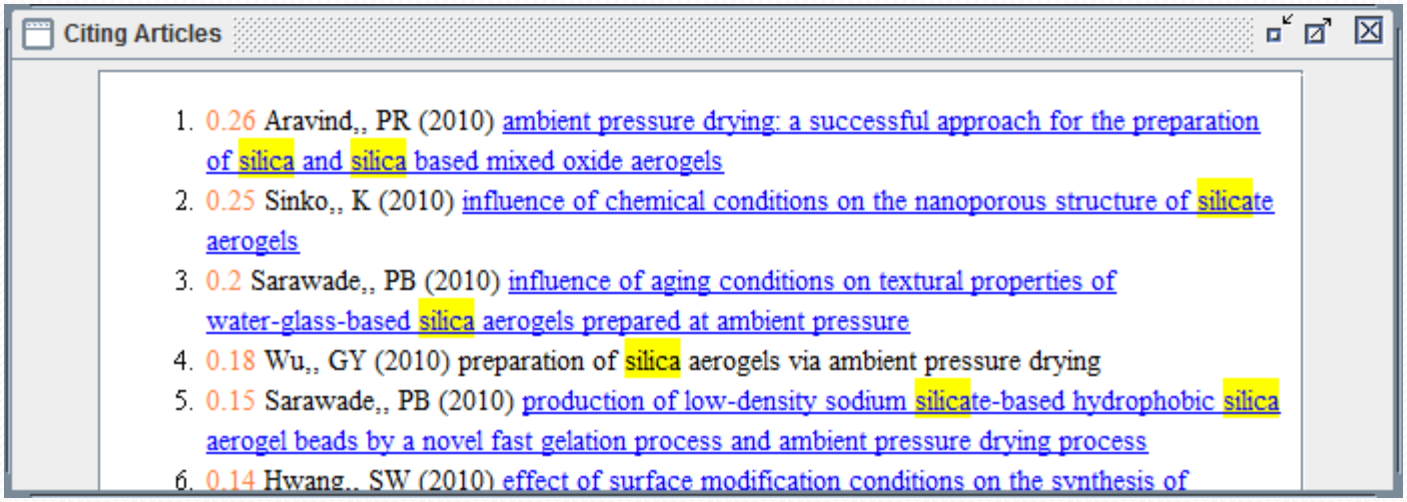
该窗口显示的是通过三种方法得到的聚类命名（反映的是研究前沿领域）



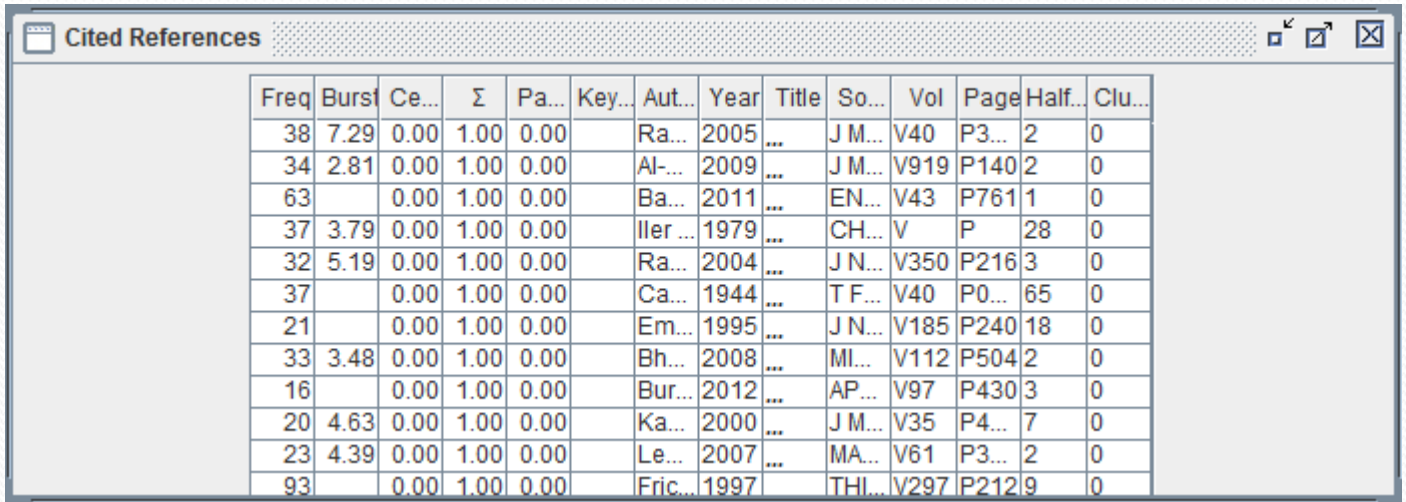
Select	Clust...	Size	Silho...	mean...	Top Terms (tf*idf weighting)	Top Terms (log-likelihood ratio, p-lev...	Terms (mutual information)
	0	102	0.815	1998	(15.57) glazing; (15.22) measureme...	silica (649.64, 1.0E-4); pressure (32...	additives
	1	88	0.775	1999	(16.48) 4-dihydroxybenzoic; (16.48) p...	carbon (210.02, 1.0E-4); xerogels (1...	mesopore
	2	80	0.879	2010	(15.22) durable; (14.84) limiting; (14....	graphene (1023.99, 1.0E-4); three-di...	assemblies
	3	76	0.747	2003	(12.87) mesophase-pitch-based; (12...	carbon (192.37, 1.0E-4); supercapac...	synergistic
	4	68	0.746	2001	(16.99) tri-isocyanate; (14.84) stream...	reinforced (196.79, 1.0E-4); aerogels...	large
	5	60	0.924	2006	(14.42) nanofibres; (14.42) current; (...	cellulose (341.28, 1.0E-4); nanocom...	biomaterials
	6	57	0.98	2003	(24.48) interstellar; (21.79) prelimina...	stardust (762.02, 1.0E-4); interstellar...	combined
	7	53	0.947	2004	(17.23) webs; (16.74) adsorption/de...	deionization (922.98, 1.0E-4); capacit...	deionisation
	8	53	0.764	2000	(13.45) non-alkoxide; (12.87) cu-cr; (...	addition (80.3, 1.0E-4); sol-gel (79.1...	iron-oxide
	9	44	0.877	2010	(15.89) bamboo; (13.96) polyphenol; ...	superhydrophobic (176.84, 1.0E-4); ...	extraordinary
	10	40	0.872	1995	(10.42) behaviour; (10.42) sonogels; ...	fractal (42.75, 1.0E-4); he-4 (37.11, 1....	confinement
	11	38	1	1999	(17.04) superfluid; (15.89) he-3-a; (1...	he-3 (496.85, 1.0E-4); superfluid (47...	matrices
	12	34	0.947	2002	(14.42) cdte; (14.42) bonding; (14.42...	nanocrystals (119.94, 1.0E-4); hyper...	measurement
	13	22	0.985	2000	(8.46) zeolite; (7.64) morphologies; (...	zeolite (45.31, 1.0E-4); interaction (3...	promoter
	14	20	0.955	2002	(9.17) copper; (7.39) aerogel-copper;...	supercritical (59.9, 1.0E-4); supporte...	matrices
	15	7	0.991	1998	(8.34) manganese; (7.49) colloidal; (...	microstructure (59.41, 1.0E-4); mang...	aerogels

该窗口信息还可以通过菜单“Cluster”，
“4 summarization of cluster”得到

该窗口显示的施引文献（这些文献代表了研究前沿）。标题中着重标识的词汇正是通过相关方法提取的聚类命名

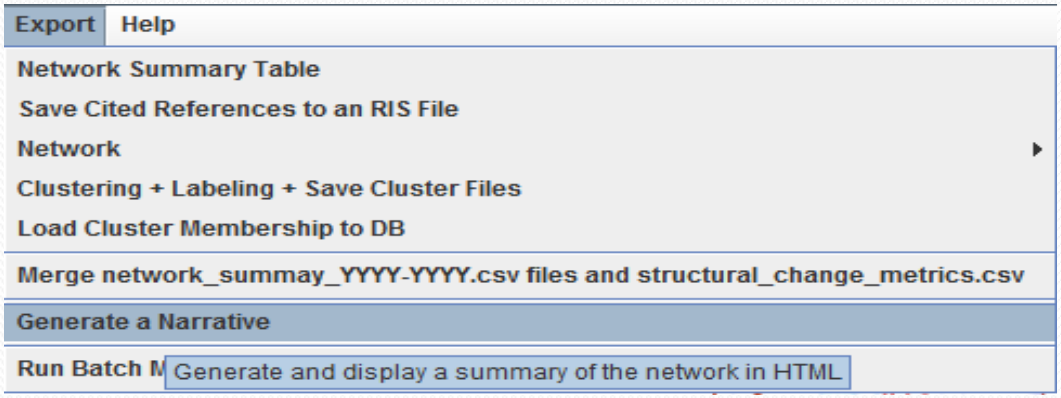


该窗口显示的是被引文献（反映的是知识基础），这些文献也是直接在图谱中显示的节点信息



Freq	Burst	Ce...	Σ	Pa...	Key...	Aut...	Year	Title	So...	Vol	Page	Half...	Clu...
38	7.29	0.00	1.00	0.00		Ra...	2005	...	J M...	V40	P3...	2	0
34	2.81	0.00	1.00	0.00		Al-...	2009	...	J M...	V919	P140	2	0
63		0.00	1.00	0.00		Ba...	2011	...	EN...	V43	P761	1	0
37	3.79	0.00	1.00	0.00		Iler ...	1979	...	CH...	V	P	28	0
32	5.19	0.00	1.00	0.00		Ra...	2004	...	J N...	V350	P216	3	0
37		0.00	1.00	0.00		Ca...	1944	...	T F...	V40	P0...	65	0
21		0.00	1.00	0.00		Em...	1995	...	J N...	V185	P240	18	0
33	3.48	0.00	1.00	0.00		Bh...	2008	...	MI...	V112	P504	2	0
16		0.00	1.00	0.00		Bur...	2012	...	AP...	V97	P430	3	0
20	4.63	0.00	1.00	0.00		Ka...	2000	...	J M...	V35	P4...	7	0
23	4.39	0.00	1.00	0.00		Le...	2007	...	MA...	V61	P3...	2	0
93		0.00	1.00	0.00		Fric...	1997		THI...	V297	P212	9	0

自动生成研究报告



AUTOMATICALLY GENERATED NARRATIVES

Time of creation: Tue May 10 16:12:29 CST 2016

MAJOR CLUSTERS

The network is divided into **16** co-citation clusters. These clusters are labeled by index terms from their own citers. The largest **6** clusters are summarized.

Table 1. Summary of the largest 6 clusters.

ClusterID	Size	Silhouette	Label (TFIDF)	Label (LLR)	Label (MI)	mean(Citee Year)
0	102	0.815	(15.57) glazing	silica (649.64, 1.0E-4)	additives	1998
1	88	0.775	(16.48) 4-dihydroxybenzoic	carbon (210.02, 1.0E-4)	mesopore	1999
2	80	0.879	(15.22) durable	graphene (1023.99, 1.0E-4)	assemblies	2010
3	76	0.747	(12.87) mesophase-pitch-based	carbon (192.37, 1.0E-4)	synergistic	2003
4	68	0.746	(16.99) tri-isocyanate	reinforced (196.79, 1.0E-4)	large	2001
5	60	0.924	(14.42) nanofibres	cellulose (341.28, 1.0E-4)	biomaterials	2006

The largest cluster (#0) has 102 members and a silhouette value of 0.815. It is labeled as *silica* by LLR, *glazing* by TFIDF, and *additives* by MI. The most active citer to the cluster is 0.26 Aravind,, PR (2010) ambient pressure drying: a successful approach for the preparation of silica and silica based mixed oxide aerogels.

The second largest cluster (#1) has 88 members and a silhouette value of 0.775. It is labeled as *carbon* by LLR, *4-dihydroxybenzoic* by TFIDF, and *mesopore* by MI. The most active citer to the cluster is 0.18 Carrott,, PJM (2010) characterisation of the porosity of polymer and carbon aerogels containing fe, ni or cu prepared from 2,4-dihydroxybenzoic acid by n-nonane pre-adsorption and density functional theory.

The third largest cluster (#2) has 80 members and a silhouette value of 0.879. It is labeled as *graphene* by LLR, *durable* by TFIDF, and *assemblies* by MI. The most active citer to the cluster is 0.26 Wang,, H (2015) three dimensional graphene based materials: synthesis and applications from energy storage and conversion to electrochemical sensor and environmental remediation.

The 4th largest cluster (#3) has 76 members and a silhouette value of 0.747. It is labeled as *carbon* by LLR, *mesophase-pitch-based* by TFIDF, and *synergistic* by MI. The most active citer to the cluster is 0.16 Carriazo,, D (2010) block-copolymer assisted synthesis of hierarchical carbon monoliths suitable as supercapacitor electrodes.

The 5th largest cluster (#4) has 68 members and a silhouette value of 0.746. It is labeled as *reinforced* by LLR, *tri-isocyanate* by TFIDF, and *large* by MI. The most active citer to the cluster is 0.26 Nguyen,, BN (2010) elastic behavior of methyltrimethoxysilane based aerogels reinforced with tri-isocyanate.

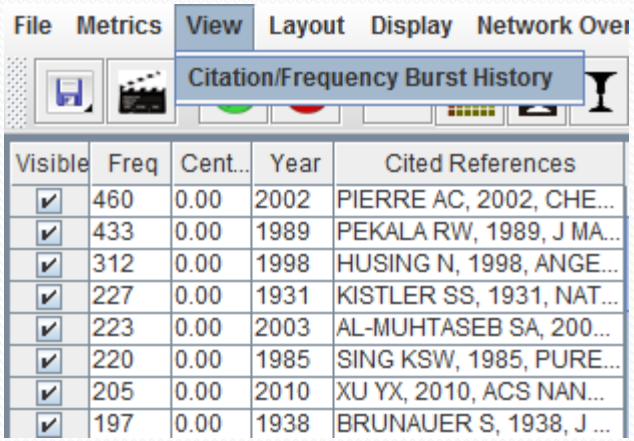
The 6th largest cluster (#5) has 60 members and a silhouette value of 0.924. It is labeled as *cellulose* by LLR, *nanofibres* by TFIDF, and *biomaterials* by MI. The most active citer to the cluster is 0.2 Heath,, L (2010) cellulose nanowhisker aerogels.

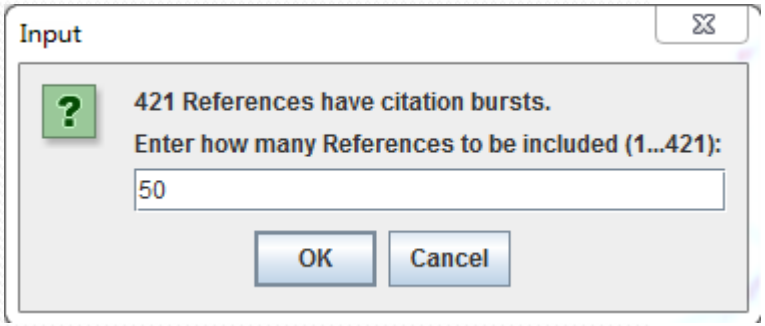
CITATION COUNTS

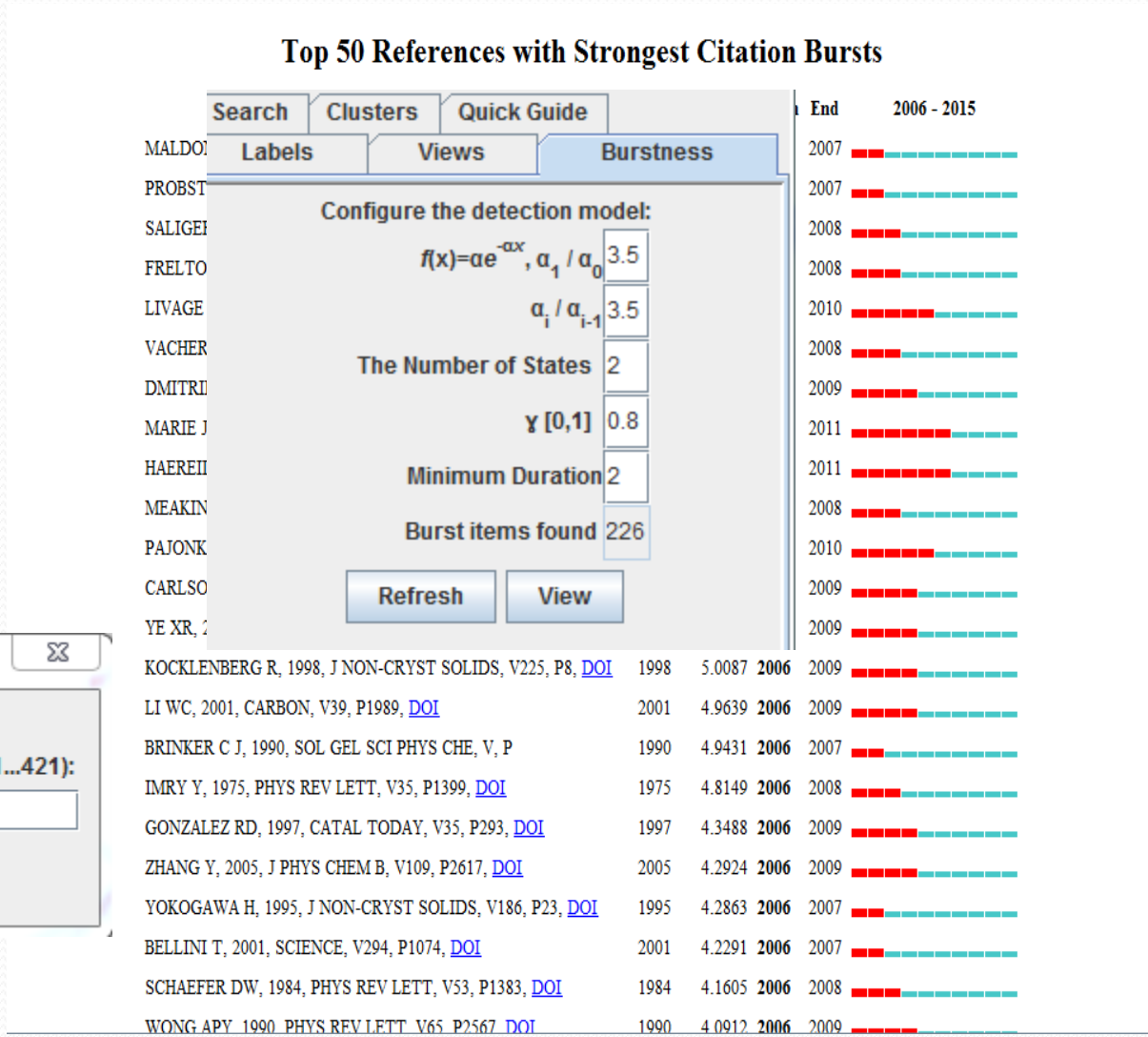
The top ranked item by citation counts is Pierre AC (2002) in Cluster #4, with citation counts of **460**. The second one is Pekala RW (1989) in Cluster #1, with citation counts of **433**. The third is Husing N (1998) in Cluster #4, with citation counts of **312**. The 4th is Kistler SS (1931) in Cluster #6, with citation counts of **227**. The 5th is Al-muhtaseb SA (2003) in Cluster #1, with citation counts of **223**. The 6th is Sing KSW (1985) in Cluster #1, with citation counts of **220**. The 7th is Xu YX (2010) in Cluster #2, with citation counts of **205**. The 8th is Brunauer S (1938) in Cluster #1, with citation counts of **197**. The 9th is Moreno-castilla C (2005) in Cluster #1, with citation counts of **180**. The 10th is Brinker C J (1990) in Cluster #4, with citation counts of **176**.

citation counts	references	cluster #
460	Pierre AC, 2002, CHEM REV, V102, P4243	4
433	Pekala RW, 1989, J MATER SCI, V24, P3221	1
312	Husing N, 1998, ANGEW CHEM INT EDIT, V37, P22	4
227	Kistler SS, 1931, NATURE, V127, P741	6
223	Al-muhtaseb SA, 2003, ADV MATER, V15, P101	1

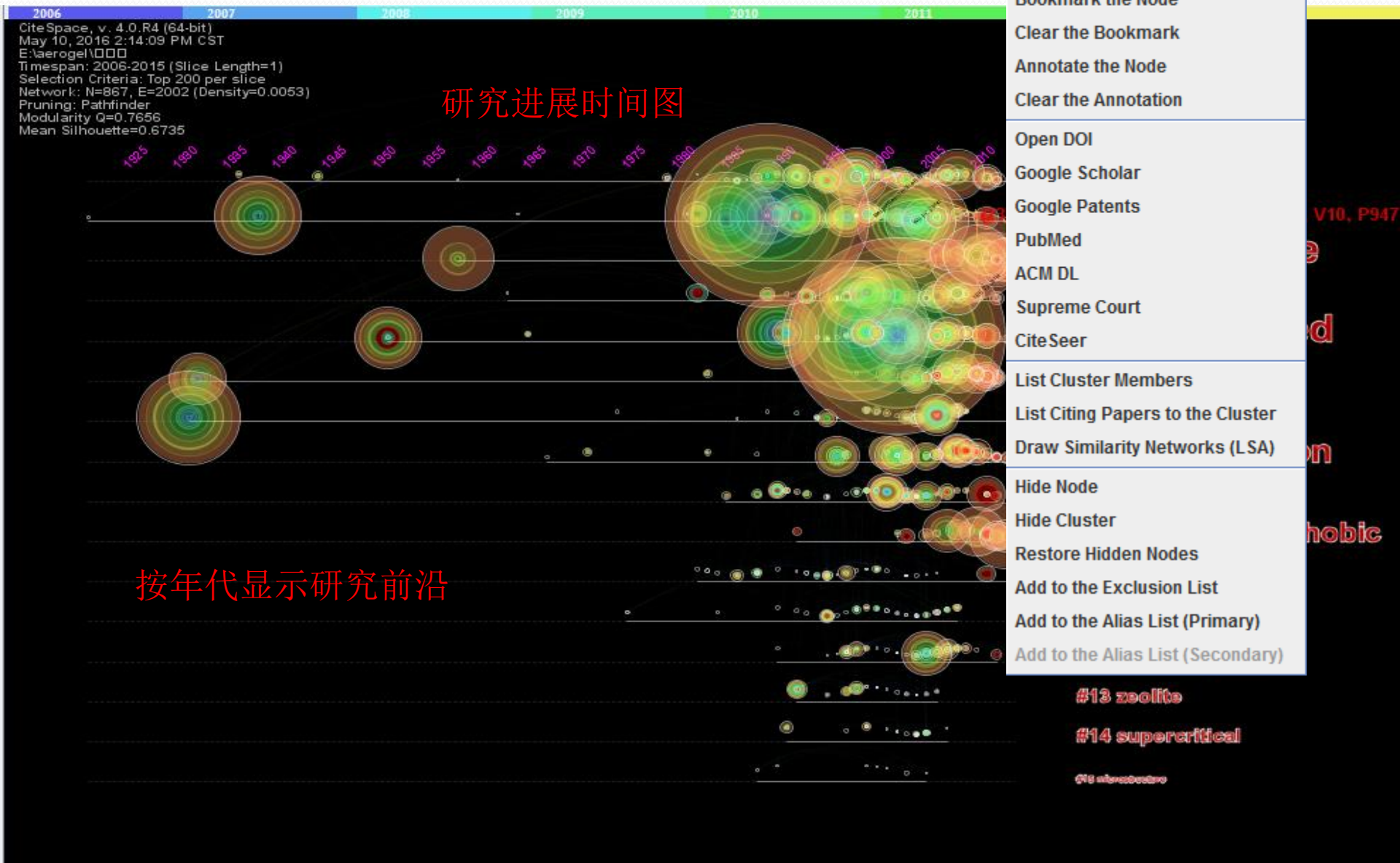
突发性文献信息

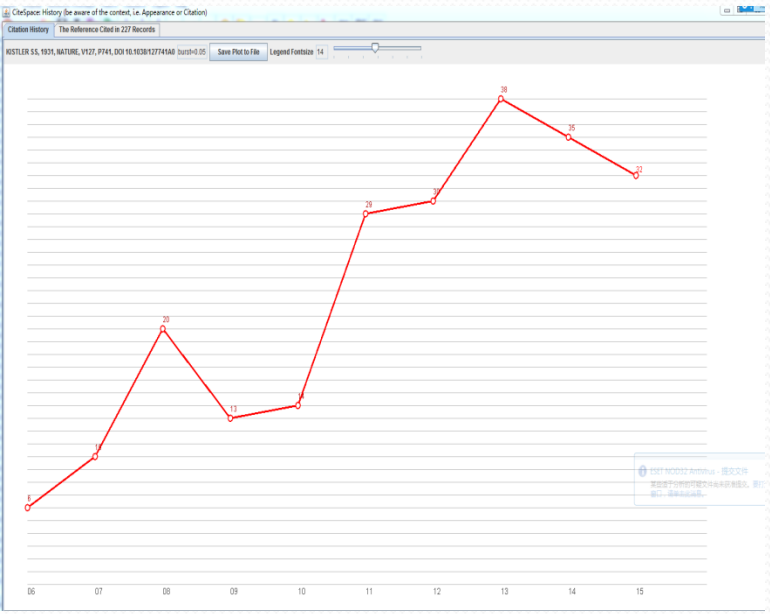

File
Metrics
View
Layout
Display
Network Over
Citation/Frequency Burst History
Visible
Freq
Cent...
Year
Cited References
460 0.00 2002 PIERRE AC, 2002, CHE...
433 0.00 1989 PEKALA RW, 1989, J MA...
312 0.00 1998 HUSING N, 1998, ANGE...
227 0.00 1931 KISTLER SS, 1931, NAT...
223 0.00 2003 AL-MUHTASEB SA, 200...
220 0.00 1985 SING KSW, 1985, PURE...
205 0.00 2010 XU YX, 2010, ACS NAN...
197 0.00 1938 BRUNAUER S, 1938, J ...


Input
421 References have citation bursts.
Enter how many References to be included (1...421):
50
OK
Cancel


Top 50 References with Strongest Citation Bursts
Search
Clusters
Quick Guide
Labels
Views
Burstness
Configure the detection model:
f(x)=αe^-αx, α1 / α0 3.5
αi / αi-1 3.5
The Number of States 2
γ [0,1] 0.8
Minimum Duration 2
Burst items found 226
Refresh
View
End
2006 - 2015
KOCKLENBERG R, 1998, J NON-CRYST SOLIDS, V225, P8, DOI 1998 5.0087 2006 2009
LI WC, 2001, CARBON, V39, P1989, DOI 2001 4.9639 2006 2009
BRINKER C J, 1990, SOL GEL SCI PHYS CHE, V, P 1990 4.9431 2006 2007
IMRY Y, 1975, PHYS REV LETT, V35, P1399, DOI 1975 4.8149 2006 2008
GONZALEZ RD, 1997, CATAL TODAY, V35, P293, DOI 1997 4.3488 2006 2009
ZHANG Y, 2005, J PHYS CHEM B, V109, P2617, DOI 2005 4.2924 2006 2009
YOKOGAWA H, 1995, J NON-CRYST SOLIDS, V186, P23, DOI 1995 4.2863 2006 2007
BELLINI T, 2001, SCIENCE, V294, P1074, DOI 2001 4.2291 2006 2007
SCHAEFER DW, 1984, PHYS REV LETT, V53, P1383, DOI 1984 4.1605 2006 2008
WONG APY, 1990, PHYS REV LETT, V65, P2567, DOI 1990 4.0912 2006 2009

Timeline 呈现方式





Coherent Expanded Aerogels and Jellies.

THE continuity of the liquid permeating jellies is demonstrated by diffusion, syneresis, and ultra-filtration, and the fact that the liquid may be replaced by other liquids of very diverse character indicates clearly that the gel structure may be independent of the liquid in which it is bathed. Hitherto the attempt to remove the liquid by evaporation has resulted in shrinkage so great that the effect upon the structure may be profound.

Mr. Charles Learned and I, with the kindly assistance and advice of Prof. J. W. McBain, undertook to test the hypothesis that the liquid in a jelly can be replaced by a gas with little or no shrinkage. Our efforts have met with complete success.

The procedure that we have adopted is as follows: The jelly is first formed in a suitable liquid in dilute form. The liquid is then replaced by another which does not dissolve the structure and has a reasonably low critical temperature. Alcohol has proved quite satisfactory for most of the inorganic gels, ether has advantages in the case of easily reduced substances, and propane was used for all of the organic jellies. In making the replacement, it is necessary that each liquid used be completely miscible with both that which precedes and that which follows it. For example, water may be replaced by alcohol and then by ether. Mere evaporation would inevitably cause shrinkage. However, the jelly is placed in a closed

使用CiteSpace进行中文的文献分析

——CSSCI和CNKI

Search results on **CNKI** - the Chinese database of academic publications (www.cnki.net):

Date of Search: **3/19/2017**

Search Term: **CiteSpace**

- By title: **282** articles
- By keywords: **871** articles
- By abstract: **1,323** articles
- By references: **1,492** articles
- By subject: **1,571** articles
- By full-text: **3,607** articles

使用CiteSpace进行中文的文献分析——CSSCI

1、登录cssci

2、进入检索页面

以《科学学研究》为例，收集其2013-2014年的数据

3、检索结果

检索条件及精炼结果444条

精炼只选择论文

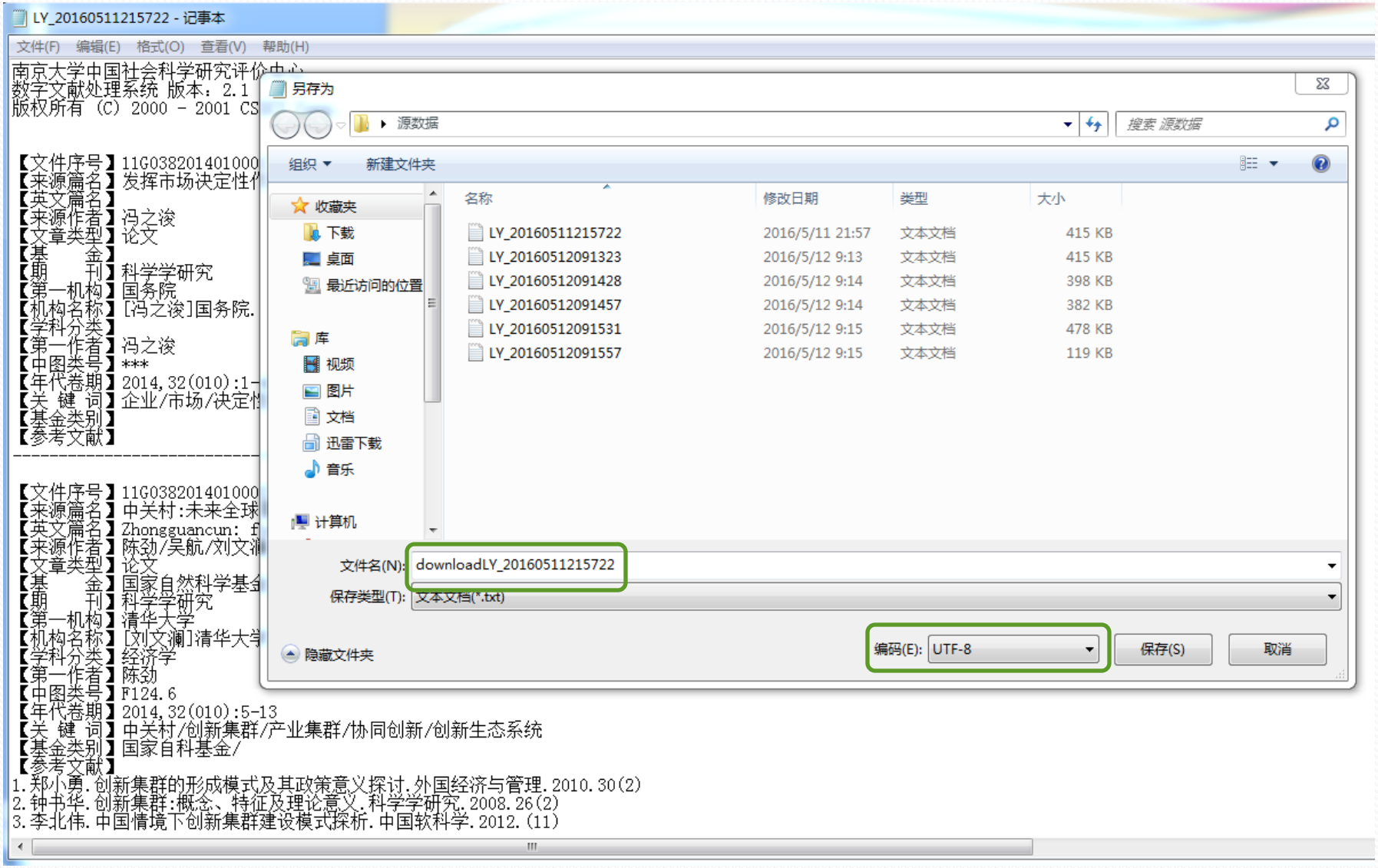
4、选择并下载数据

点击全部选择按钮，cssci一次最多下载100条记录，点击下载，直到下载完所有记录444条

☑	9	郑佳佳	区际CO2排放不平等性及与收入差距的关系研究——基于中国省际数据的分析
☑	10	熊磊 /吴晓波 /朱培忠 /陈小玲	技术能力、东道国经验与国际技术许可——境外企业对中国企业技术许可的实证研究
☑	11	吴利华 /纪静	中美电子信息制造业产业环境比较分析——基于关联产业的视角
☑	12	曾国屏 /林菲	创业型科研机构初探
☑	13	薛元昊 /王重鸣	基于组织学习理论的企业知识产权策略研究
☑	14	樊路青 /刘雯雯	“二元论”视角下的技术获取战略与吸收能力——基于中国经验的实证研究
☑	15	孙永磊 /党兴华 /宋晶	网络惯例形成的影响因素探索及实证研究
☑	16	阿儒涵 /李晓轩	我国政府科技资源配置的问题分析——基于委托代理理论视角
☑	17	王瑜 /任浩	模块化组织价值创新:内涵与本质
☑	18	张文红 /赵亚普 /陈爱玲	外部研发机构联系能否提升企业创新？——跨界搜索的中介作用
☑	19	张爱琴 /侯光明 /李存金	面向工程技术项目的群体创新方法集成研究
☑	20	王建 /胡珑瑛 /马涛	联盟网络中企业创新平衡模式选择的影响研究——基于网络结构的视角

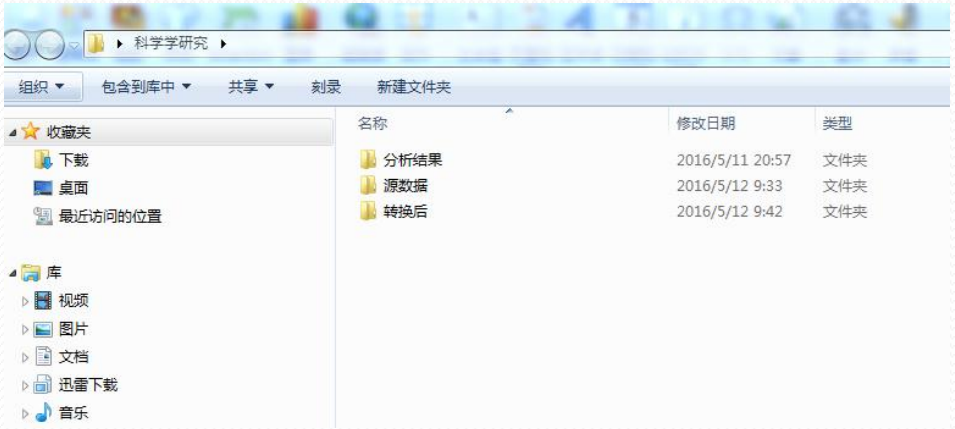
☑ 全部选择 显示 下载 收藏

5、打开所下载的数据文本并另存为UTF-8格式，以download*.txt命名

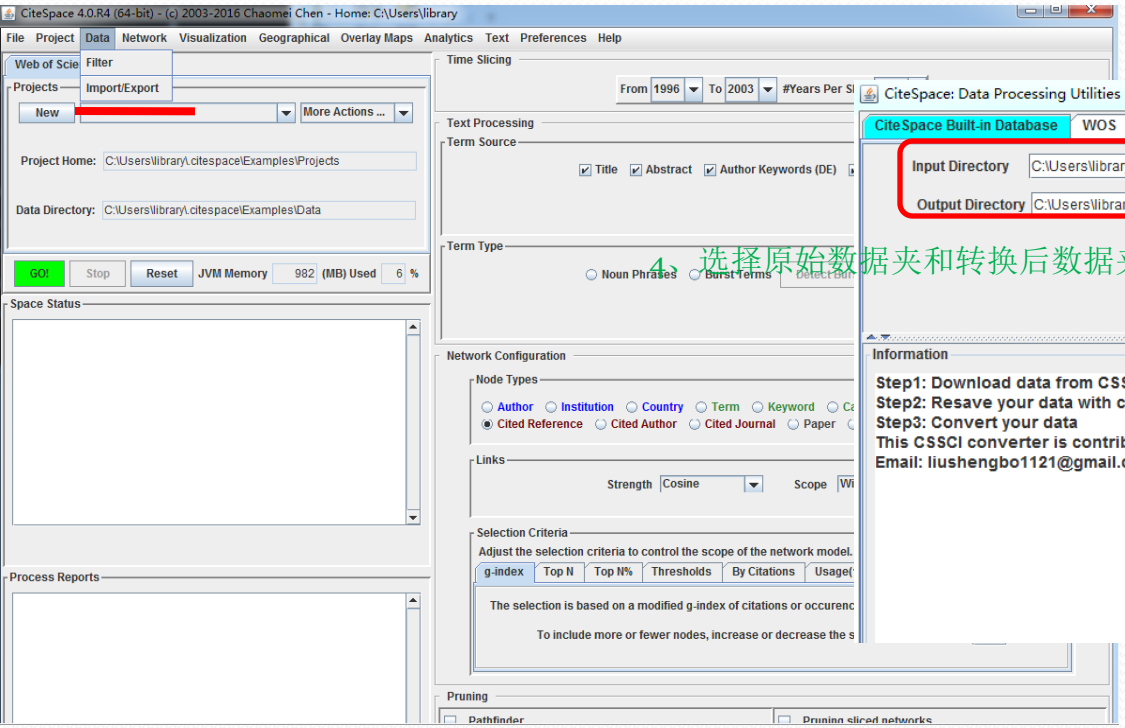


6、数据转换

1、为原始数据和转换后数据分别建立文件夹



2、导入数据



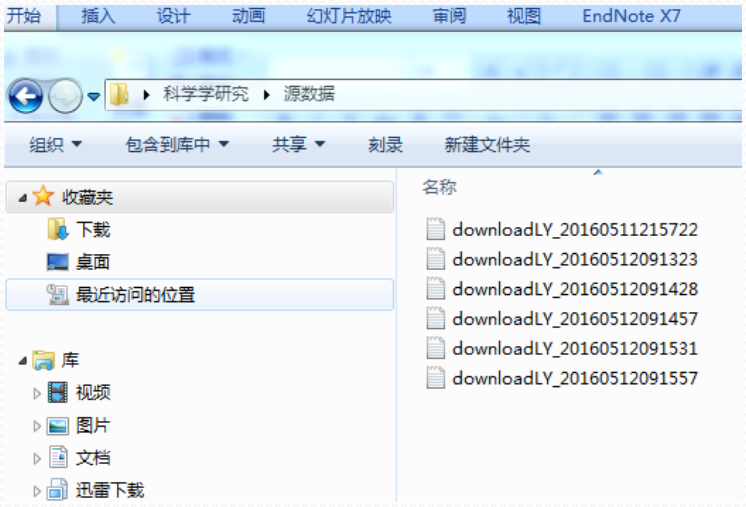
3、选择cssci

4、选择原始数据夹和转换后数据夹

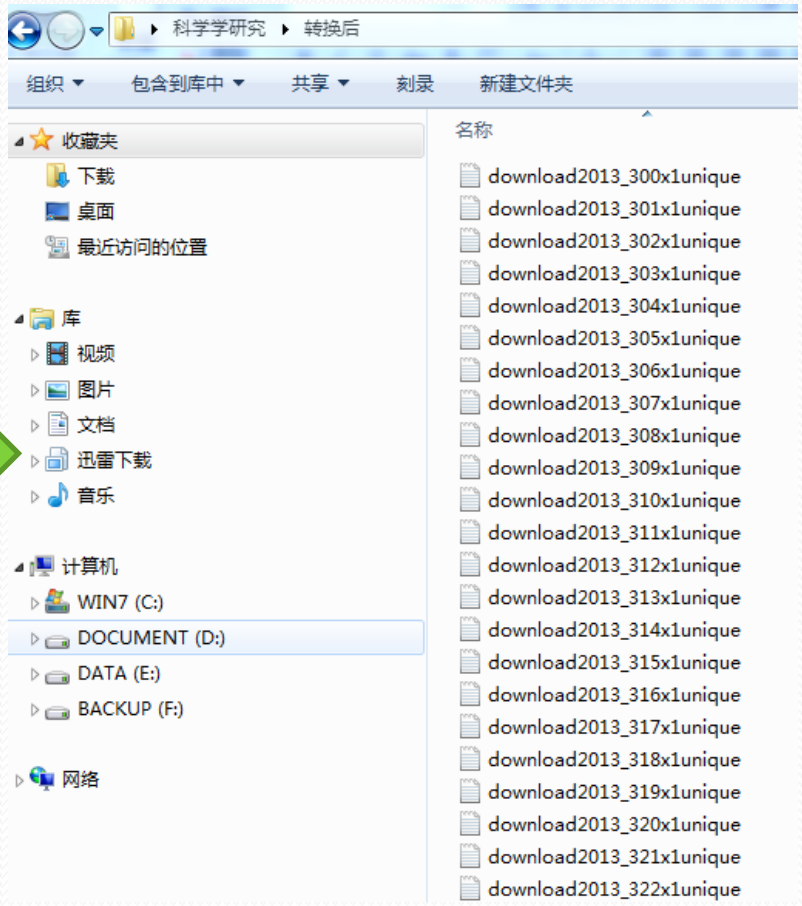
5、点击“Format Conversion”，完成转换后会显示“Finished”

7、数据转换结果

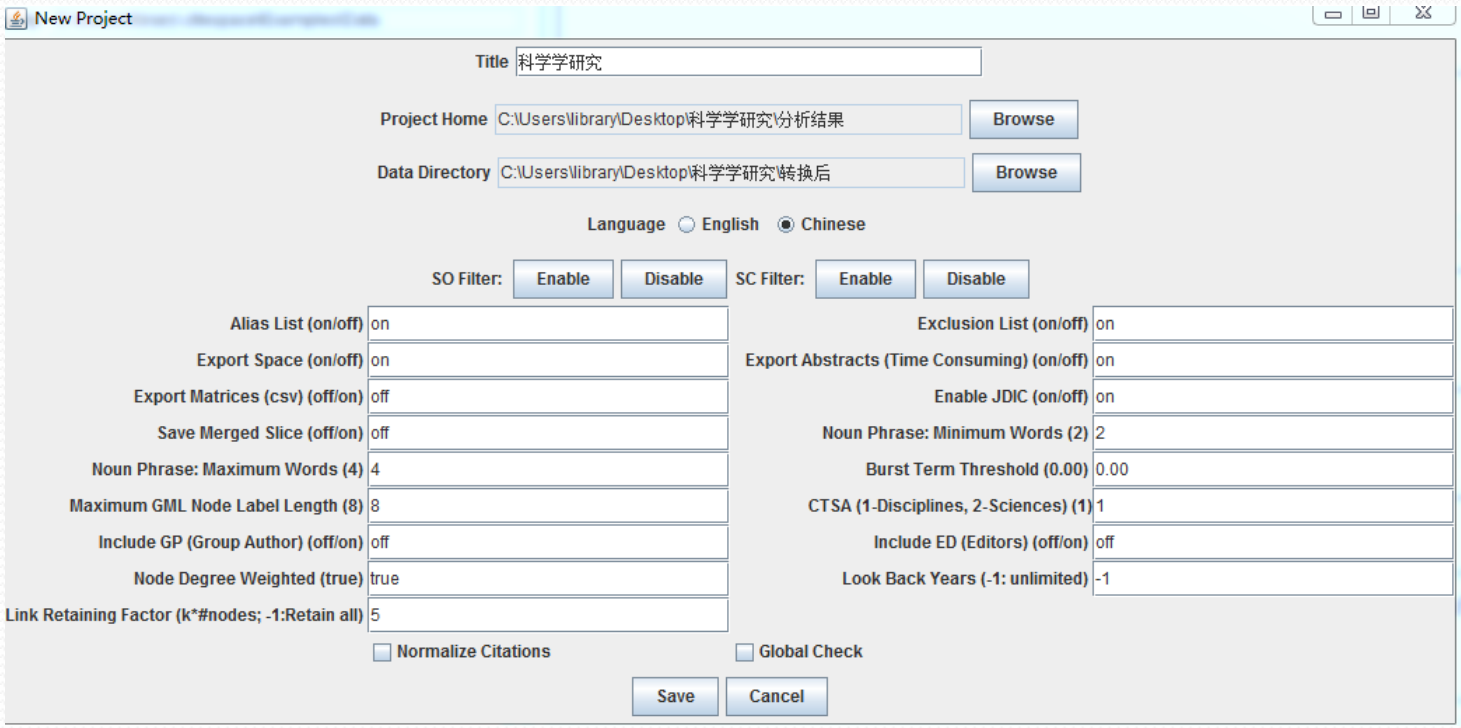
转换前



转换后



8、使用CiteSpace进行分析



9、可视化结果

2013-2014科学学研究的文献共引网络

使用CiteSpace进行中文的文献分析——CNKI

1、登录CNKI → 2、进入期刊检索页面

以《科学学研究》为例，收集其2013-2014年的数据

需要注意的是CNKI没有文献类型的分类，而检索的结果中新闻、会议通知等信息需要在数据收集时删除。因此需要进行手工删除，建议可以在下载时逐页检查。

3、导出数据

筛选出433篇

选择所有筛选出的433篇文献，再点击“导出/参考文献”，进入文献输入界面，此时需要选择输入数据的类型。使用CiteSpace进行分析的文献类型输入为“Refworks” 。建议输入“Refworks”和“Endnote”两种格式。前者可以进行文献可视化分析，而后者可以用于进行论文写作时使用。

点击“导出”下载数据。CNKI可以一次下载500条数据

CAJ-CD格式引文

查新（引文格式）

查新（自定义引文格式）

CNKI E-Study
下载软件

CNKI桌面版个人数字图书馆
下载软件

Refworks

EndNote

NoteExpress

NoteFirst

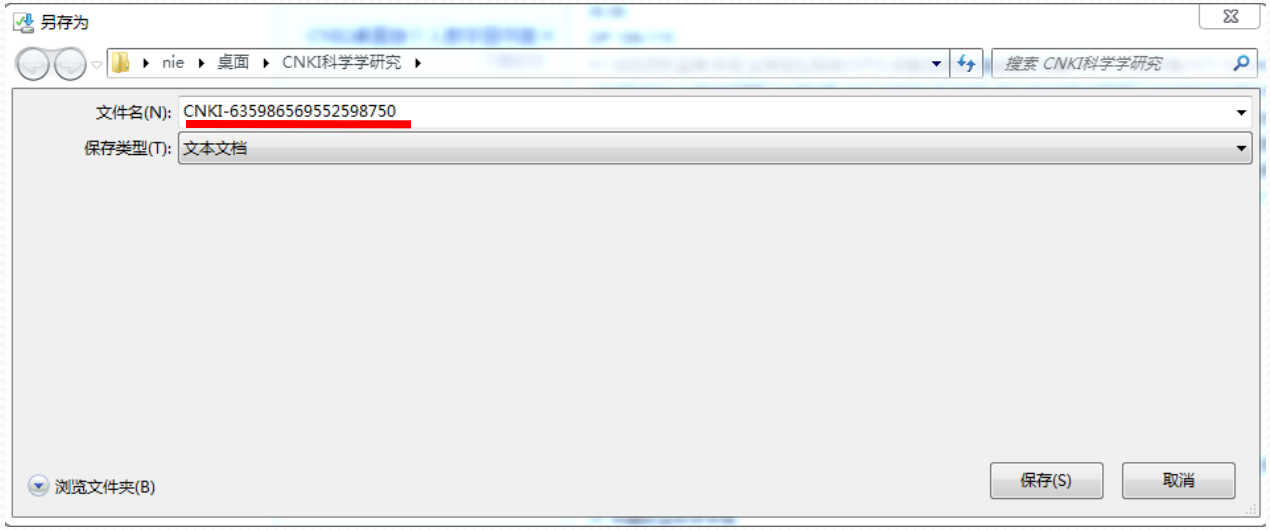
自定义（支持需输出更多文献信息的查新等用途）

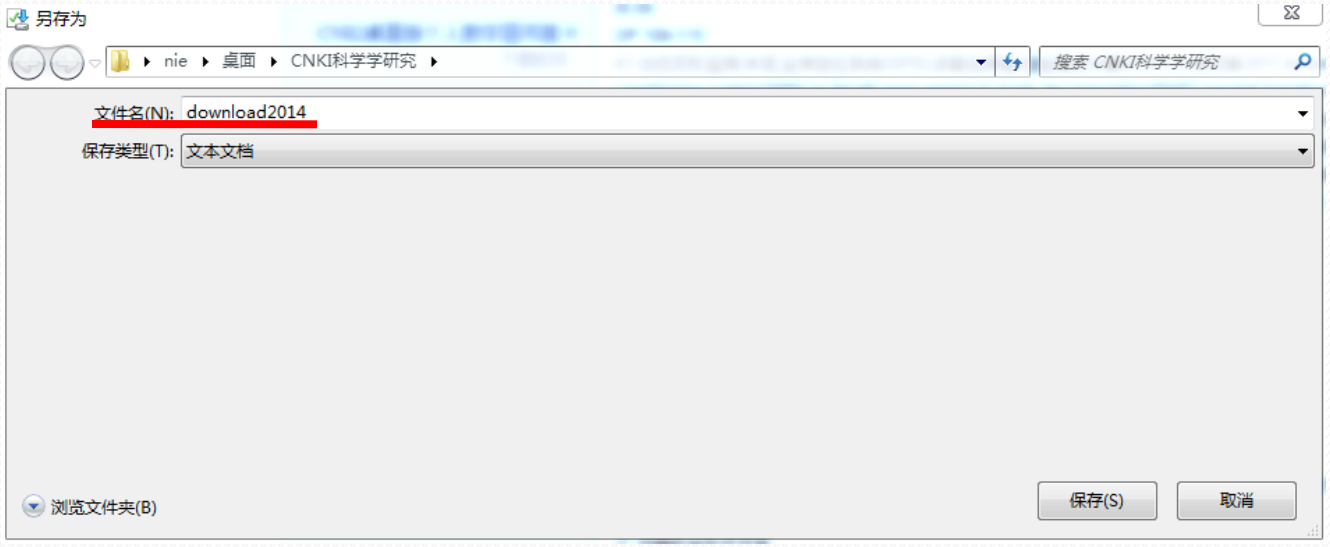
复制到剪贴板 | 打印 | 导出 | xls | doc | 定制到个人/机构馆

RT Journal Article
SR 1
A1 李万;常静;王敏杰;朱学彦;金爱民;
AD 上海市科学学研究所;
T1 创新3.0与创新生态系统
JF 科学学研究
YR 2014
IS 12
OP 1761-1770
K1 创新3.0;创新生态系统;第三代创新政策 innovation 3.0;innovation ecosystems;the third generation of innovation policy
AB 从创新理论发展演变、企业创新模式3.0兴起、第三代创新政策实践等多重视角,系统梳理了近年来创新3.0范式演变的理论基础与实践探索,认为其实质是以创新生态系统为核心特征的新一代创新范式。在分析创新生态系统兴起和发展动因的基础上,深入阐释了创新生态系统的概念与特征。并提出在我国创新驱动发展战略下,建设世界顶级创新生态系统的基本考虑。
SN 1003-2053
CN 11-1805/G3
LA 中文;
DS CNKI

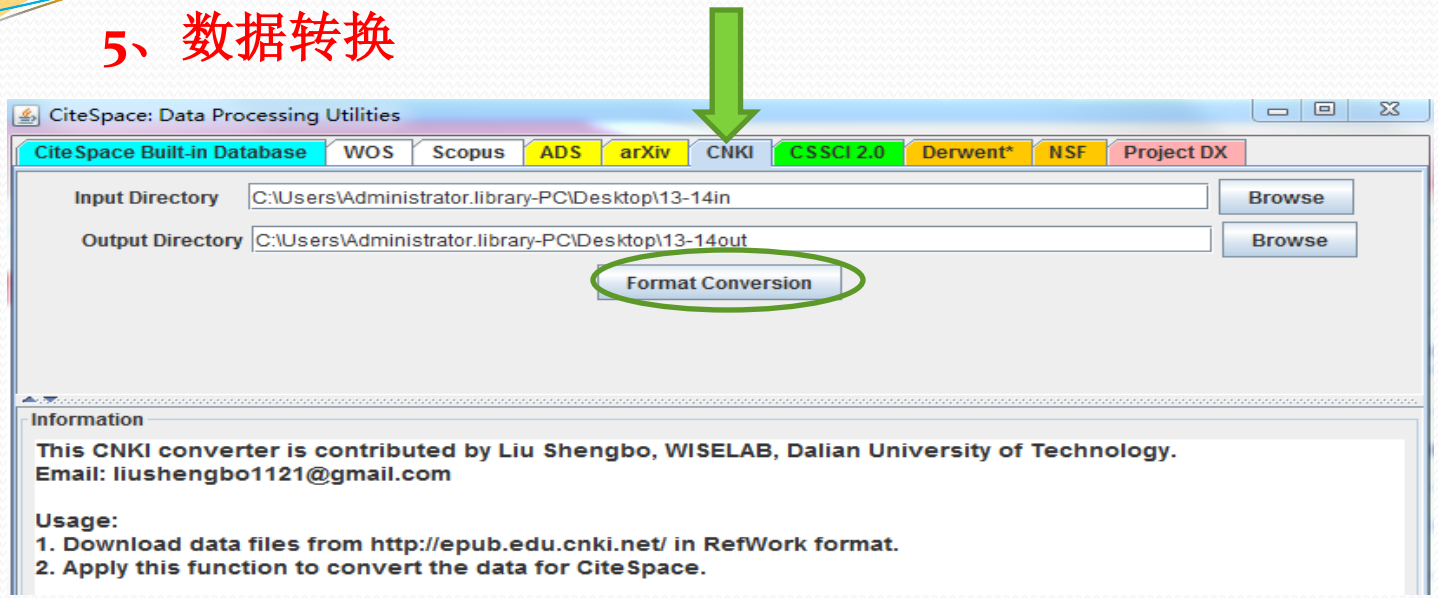
RT Journal Article
SR 1
A1 梅亮;陈劲;刘洋;
AD 浙江大学公共管理学院;清华大学经济管理学院;华南理工大学工商管理学院;
T1 创新生态系统:源起、知识演进和理论框架
JF 科学学研究
YR 2014
IS 12
OP 1771-1780
K1 创新生态系统;知识图谱;共生演化;科学计量 innovation ecosystem;knowledge mapping;coevolution;scientific metrology
AB 创新驱动发展的背景下,企业竞争优势的提升越来越依赖其所处的创新生态系统。作为市场与组织的中间层次,生态系统视角成为创新理论研究范式的新方向。现有的研究缺乏对于创新生态系统理论及其研究演进的系统性回顾。本文以科学计量方法为基础,系统论述了创新生态系统理论的源起、知识演进和理论框架。研究结论显示:创新生态系统的理论研究主要围绕商业生态系统,价值创造,开放式创新,创新生态系统四大聚类展开。基于重点文献对创新生态系统理论知识演进的分析,创新生态系统的理论框架可分为核心文献、理论基础、研究方法三大层次。
SN 1003-2053
CN 11-1805/G3
LA 中文;

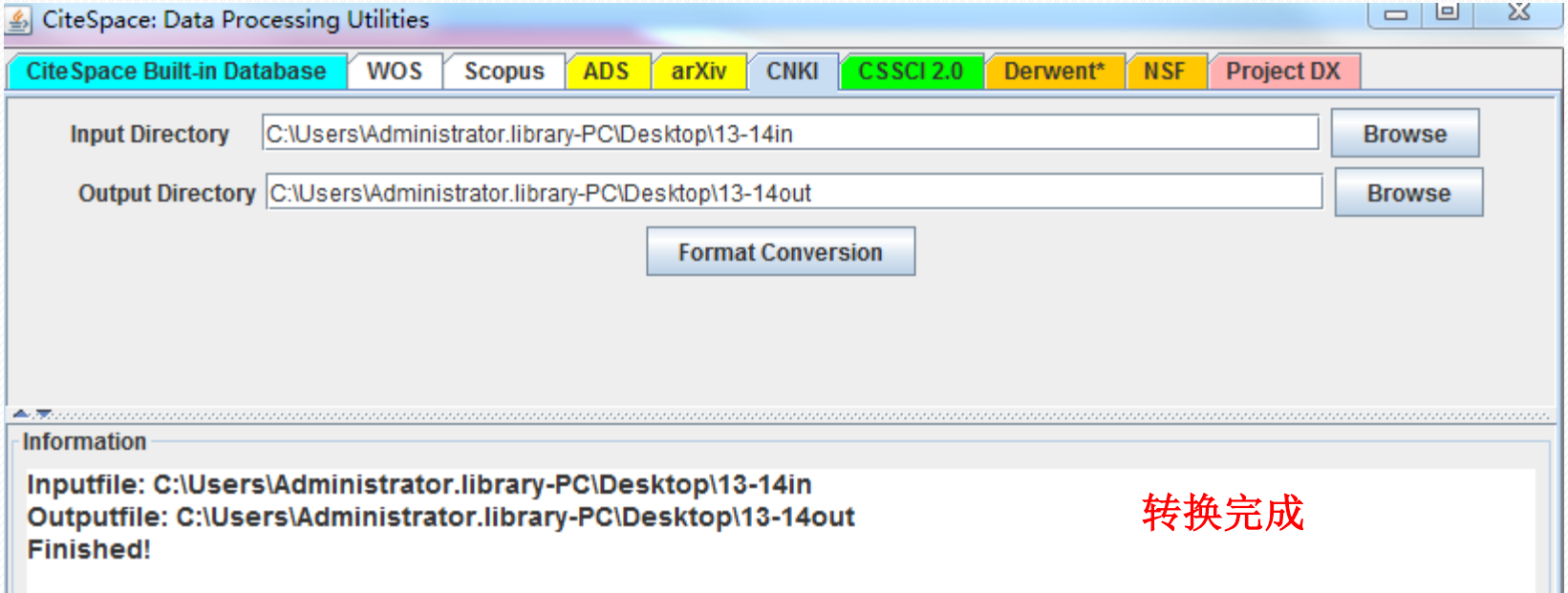
4、保存数据以download*.txt命名



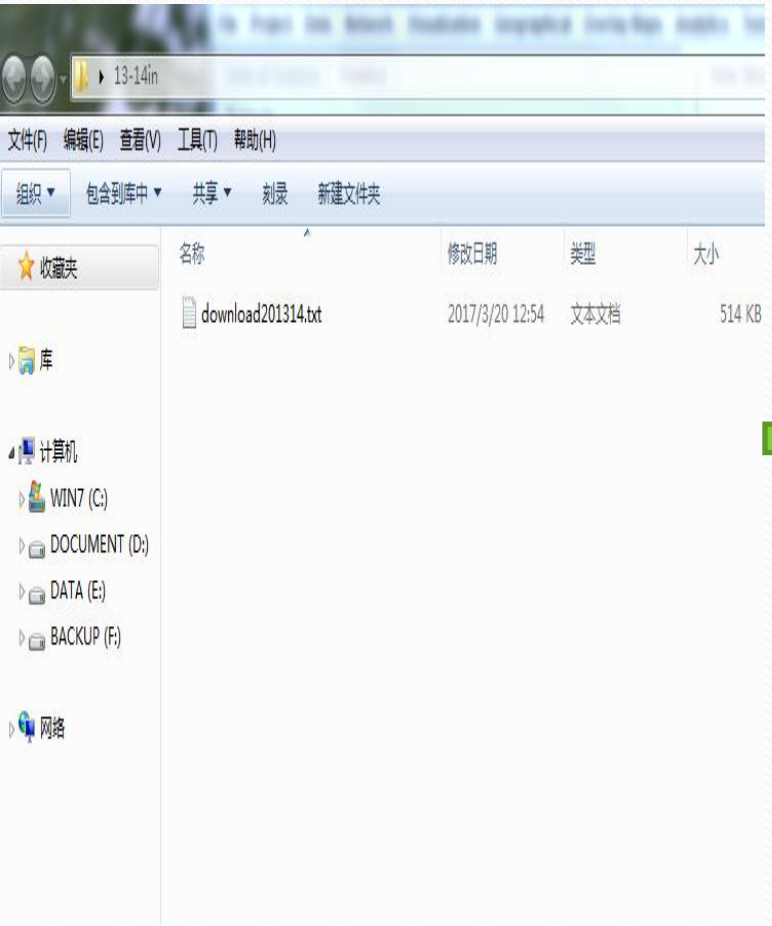


5、数据转换

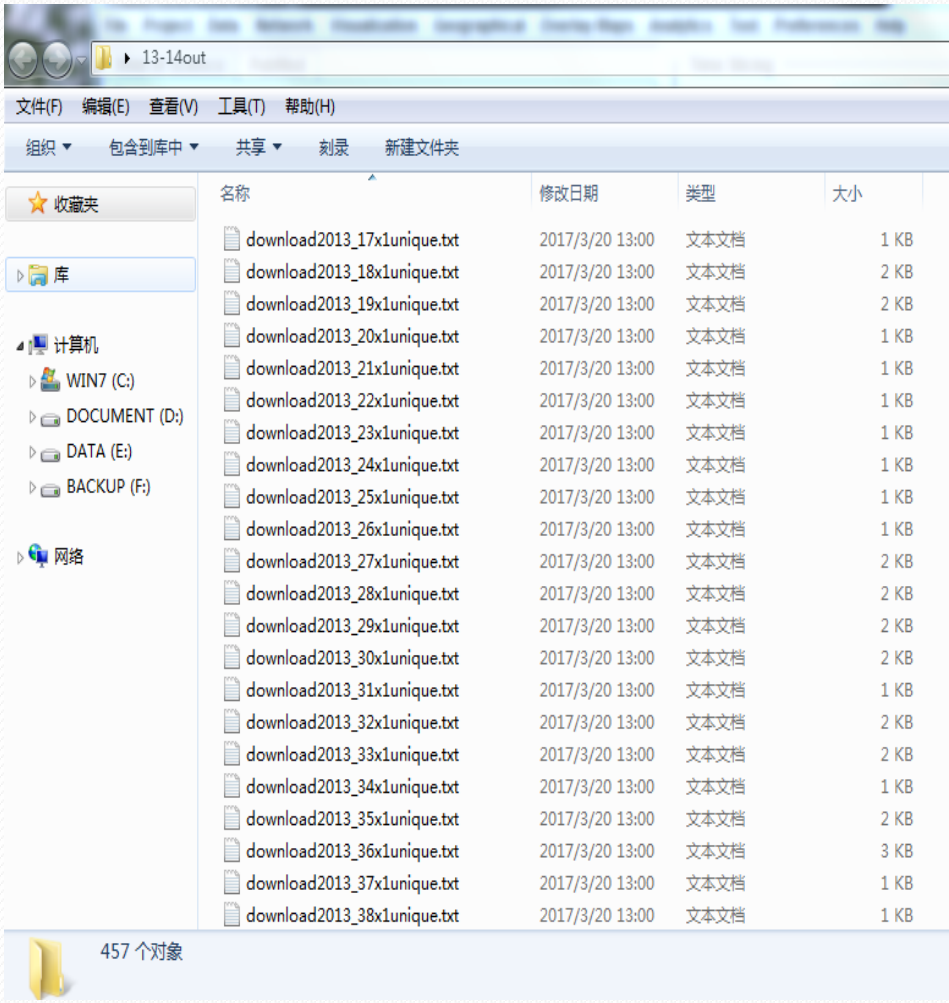

CiteSpace: Data Processing Utilities
CiteSpace Built-in Database
WOS
Scopus
ADS
arXiv
CNKI
CSSCI 2.0
Derwent*
NSF
Project DX
Input Directory
C:\Users\Administrator.library-PC\Desktop\13-14in
Browse
Output Directory
C:\Users\Administrator.library-PC\Desktop\13-14out
Browse
Format Conversion
Information
This CNKI converter is contributed by Liu Shengbo, WISELAB, Dalian University of Technology.
Email: liushengbo1121@gmail.com
Usage:
1. Download data files from http://epub.edu.cnki.net/ in RefWork format.
2. Apply this function to convert the data for CiteSpace.


CiteSpace: Data Processing Utilities
CiteSpace Built-in Database
WOS
Scopus
ADS
arXiv
CNKI
CSSCI 2.0
Derwent*
NSF
Project DX
Input Directory
C:\Users\Administrator.library-PC\Desktop\13-14in
Browse
Output Directory
C:\Users\Administrator.library-PC\Desktop\13-14out
Browse
Format Conversion
Information
Inputfile: C:\Users\Administrator.library-PC\Desktop\13-14in
Outputfile: C:\Users\Administrator.library-PC\Desktop\13-14out
Finished!

转换完成


13-14in
文件(F) 编辑(E) 查看(V) 工具(T) 帮助(H)
组织 包含到库中 共享 刻录 新建文件夹
收藏夹
库
计算机
WIN7 (C:)
DOCUMENT (D:)
DATA (E:)
BACKUP (F:)
网络
名称 修改日期 类型 大小
download201314.txt 2017/3/20 12:54 文本文档 514 KB

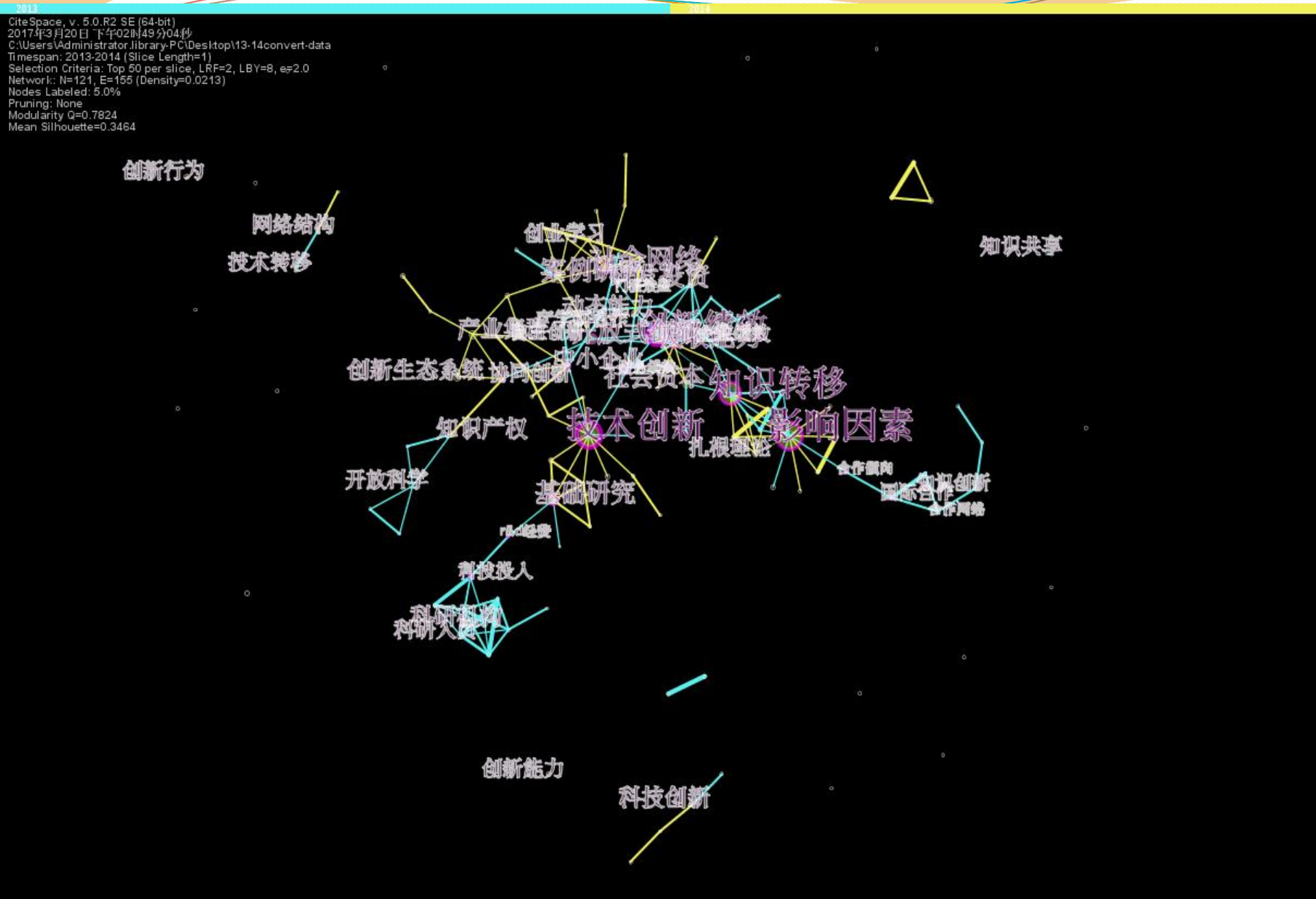
转换前


13-14out
文件(F) 编辑(E) 查看(V) 工具(T) 帮助(H)
组织 包含到库中 共享 刻录 新建文件夹
收藏夹
库
计算机
WIN7 (C:)
DOCUMENT (D:)
DATA (E:)
BACKUP (F:)
网络
名称 修改日期 类型 大小
download2013_17x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_18x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_19x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_20x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_21x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_22x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_23x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_24x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_25x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_26x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_27x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_28x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_29x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_30x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_31x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_32x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_33x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_34x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_35x1unique.txt 2017/3/20 13:00 文本文档 2 KB
download2013_36x1unique.txt 2017/3/20 13:00 文本文档 3 KB
download2013_37x1unique.txt 2017/3/20 13:00 文本文档 1 KB
download2013_38x1unique.txt 2017/3/20 13:00 文本文档 1 KB
457 个对象

转换后

可视化结果

2013-2014科学学研究的关键词共现分析



CiteSpace - Summary Table (sorted by Σ)

Save/Show as HTML: network_summary.html | Save as CSV | Save as RIS

Freq	Burst	Centrality	Σ	PageR...	Keyword	Author	Year	Title	Source	Vol	Page	HalfLife	Cluster
11		0.49	1.00	0.00		创新绩效	2013	...	SO	V	P	0	0
15		0.46	1.00	0.00		技术创新	2013	...	SO	V	P	0	2
14		0.35	1.00	0.00		知识转移	2013	...	SO	V	P	0	1
2		0.34	1.00	0.00		财务绩效	2013	...	SO	V	P	0	0
17		0.28	1.00	0.00		影响因素	2013	...	SO	V	P	1	1
6		0.25	1.00	0.00		基础研究	2013	...	SO	V	P	0	2
2		0.20	1.00	0.00		r&d经费	2013	...	SO	V	P	0	2
7		0.18	1.00	0.00		开放式...	2013	...	SO	V	P	0	0
3		0.18	1.00	0.00		科技投入	2013	...	SO	V	P	0	5
5		0.16	1.00	0.00		中小企业	2013	...	SO	V	P	1	7
4		0.16	1.00	0.00		协同创新	2013	...	SO	V	P	1	3
7		0.15	1.00	0.00		吸收能力	2013	...	SO	V	P	1	0
2		0.14	1.00	0.00		合作倾向	2013	...	SO	V	P	0	6
8		0.13	1.00	0.00		社会网络	2013	...	SO	V	P	1	4
3		0.12	1.00	0.00		国际合作	2013	...	SO	V	P	0	6
5		0.09	1.00	0.00		知识产权	2013	...	SO	V	P	1	3
5		0.09	1.00	0.00		产业集群	2014	...	SO	V	P	0	3
7		0.08	1.00	0.00		案例研究	2013	...	SO	V	P	1	4
3		0.08	1.00	0.00		自主创新	2014	...	SO	V	P	0	3
3		0.07	1.00	0.00		企业绩效	2013	...	SO	V	P	0	0
2		0.07	1.00	0.00		合作网络	2013	...	SO	V	P	0	6
3		0.06	1.00	0.00		产学研...	2013	...	SO	V	P	0	7
4		0.05	1.00	0.00		开放科学	2013	...	SO	V	P	0	3
3		0.05	1.00	0.00		知识创新	2013	...	SO	V	P	0	6
2		0.05	1.00	0.00		门槛效应	2013	...	SO	V	P	0	0
6		0.04	1.00	0.00		社会资本	2013	...	SO	V	P	1	0
4		0.04	1.00	0.00		科研人员	2013	...	SO	V	P	0	5
3		0.04	1.00	0.00		科研经费	2013	...	SO	V	P	0	5
6		0.03	1.00	0.00		研发投资	2013	...	SO	V	P	1	0
3		0.03	1.00	0.00		产品创新	2014	...	SO	V	P	0	7
3		0.03	1.00	0.00		战略性...	2014	...	SO	V	P	0	3

Science Mapping: A Systematic Review of the Literature. **Chaomei Chen.** *Journal of Data and Information Science. Vol. 2 No. 2, 1-40. 2017. DOI: 10.1515/jdis-2017-0006*

不同研究领域最新发表的使用CiteSpace进行文献科学计量的论文

A scientometric study of global **electric vehicle** research. Yue Hu, Jun Sun, Weimin Li, Yunlong Pan. Scientometrics (2014) 98:1269–1282 . IF=2.084(2015) (INFORMATION SCIENCE & LIBRARY SCIENCE **Q1**)

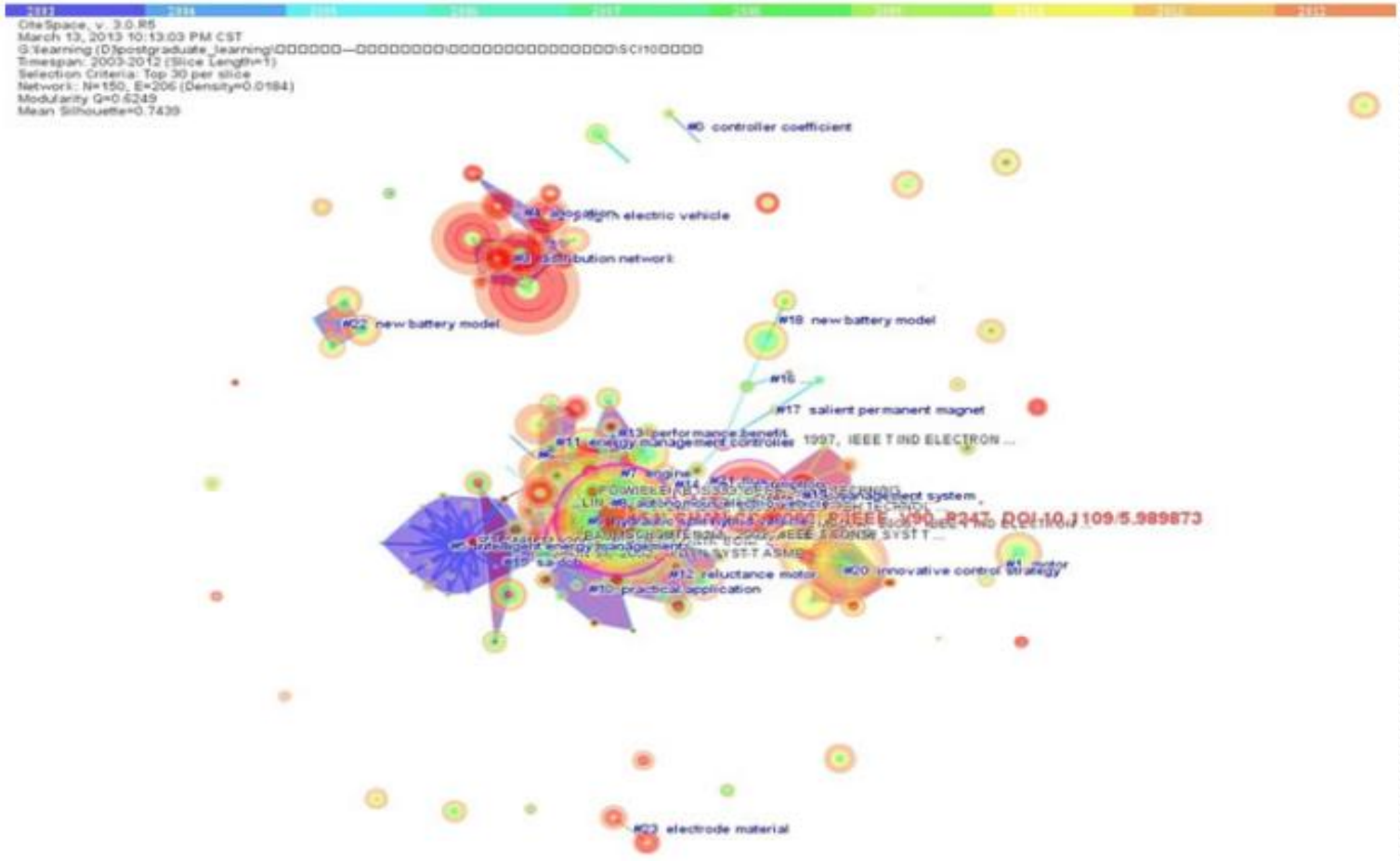


Fig. 3 The document co-citation network map of electric vehicle literatures

Table 5 Key literatures and their saliency metrics

CR	BC	Sigma (∑)	CF
Chan and Chau (1997). An overview of power electronics in electric vehicles	0.10	1.29	28
Baumann et al. (2000). Mechatronic design and control of hybrid electric vehicles	0.23	3.01	89
Salman et al. (2000). Control Strategies for Parallel Hybrid Vehicles	0.24	5.26	20
Schouten et al. (2002). Fuzzy logic control for parallel hybrid vehicles	0.10	1.44	99
Chan (2002). The state of the art of electric and hybrid vehicles	0.22	42.01	154
Emadi et al. (2005). Topological overview of hybrid electric and fuel cell vehicular power system architectures and configurations	0.33	2.35	79
Chan (2007). The state of the art of electric, hybrid, and fuel cell vehicles	0.13	1.67	109
Emadi et al. (2008). Power electronics and motor drives in electric, hybrid electric, and plug-in hybrid electric vehicles	0.11	1.90	100

CR cited reference, *BC* betweenness centrality, *CF* citation frequency

Table 6 Classical literatures and their characteristics

CR	CF	Sigma (∑)	BC
Markel et al. (2002). ADVISOR: a systems analysis tool for advanced vehicle modeling	103	1.00	0.04
Lin et al. (2003). Power management strategy for a parallel hybrid electric truck	149	1.00	0.08
Sciarretta et al. (2004). Optimal control of parallel hybrid electric vehicles	115	1.00	0.03
Kempton and Tomic (2005a, b). Vehicle-to-grid power fundamentals: calculating capacity and net revenue	133	1.02	0
Kempton and Tomic (2005a, b). Vehicle-to-grid power implementation: from stabilizing the grid to supporting large-scale renewable energy	107	1.02	0
Moreno et al. (2006). Energy-management system for a hybrid electric vehicle, using ultracapacitors and neural networks	106	1.12	0.03

CR cited reference, *CF* citation frequency, *BC* betweenness centrality

Table 7 Research fronts papers

CR	PY	CB
Kempton et al. Vehicle-to-grid power implementation: from stabilizing the grid to supporting large-scale renewable energy	2005	6.5819
Clement-Nyns et al. The impact of charging plug-in hybrid electric vehicles on a residential distribution grid	2010	9.4223
Salmasi. Control strategies for hybrid electric vehicles: evolution, classification, comparison and future trends	2007	6.5501
Wirasingha et al. Classification and review of control strategies for plug-in hybrid electric vehicles	2011	6.4724
Gong et al. Trip-based optimal power management of plug-in hybrid electric vehicles	2008	6.3520
Chan et al. Electric, hybrid, and fuel-cell vehicles: architectures and modeling	2010	6.4724
Tarascon et al. Review article issues and challenges facing rechargeable lithium batteries	2001	7.0666
Armand et al. Building better batteries	2008	7.4323
Samaras et al. Life cycle assessment of greenhouse gas emissions from plug-in hybrid vehicles: implications for policy	2008	8.2852

CR cited reference, *PY* published year, *CB* citation burstness

A review of emerging trends in **global PPP research**: analysis and visualization Jinbo Song, Honglian Zhang, Wanli Dong. Scientometrics (2016) 107:1111–1147. DOI 10.1007/s11192-016-1918-1

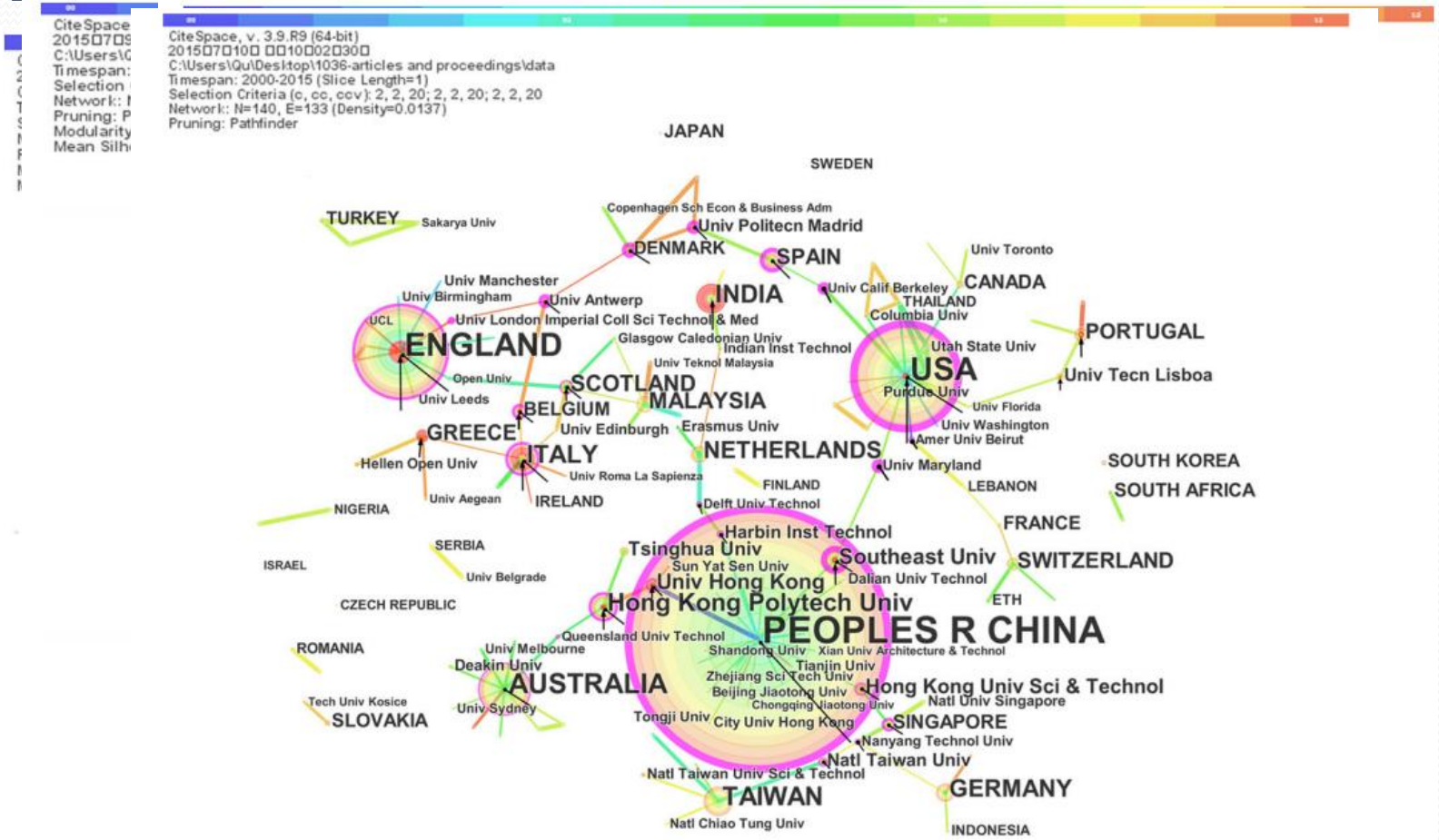


Fig. 3 Research power network, with 140 nodes and 148 links
A high betweenness centrality is indicated by a *diagonal line with a dot at the head*, and a co-citation burst is indicated by a *vertical line with an arrow pointing to the center*

A study on research hot-spots and frontiers of **agricultural science and technology innovation** –visualization analysis based on the Citespace III. Qi-Qi CHEN, Jun-Biao ZHANG, Yu HUO. Agric. Econ. – Czech, 62, 2016 (9): 429–445. IF=1.739(2015), AGRICULTURAL ECONOMICS & POLICY , ECONOMICS (**Q1**)

References Year Strength Begin End 2002 - 2015

keywords	Year	Strength	Begin	End	2002 - 2015
agricultural innovations	2002	**3.5878**	2006	2008	
knowledge	2002	**3.3687**	2008	2008	
extension	2002	**3.2156**	2006	2008	
vulnerability	2002	**3.0776**	2014	2015	
climate change	2002	**2.9344**	2011	2012	
networks	2002	**2.8405**	2012	2015	

A Visualization Review of **Cloud Computing Algorithms** in the Last Decade. Junhu Ruan, Felix T. S. Chan, Fangwei Zhu, Xuping Wang and Jing Yang. *Sustainability 2016, 8, 1008; doi:10.3390/su8101008*

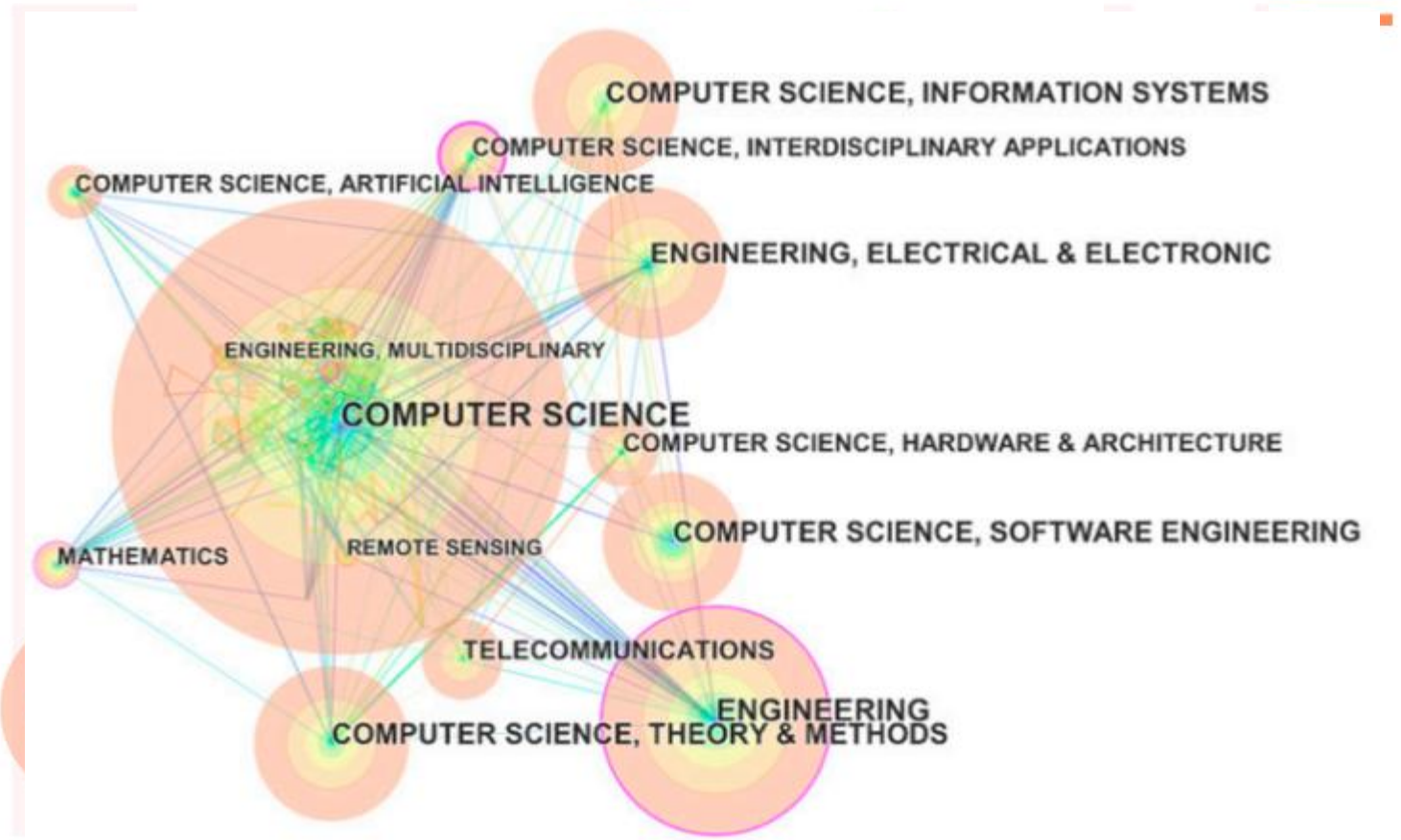


Figure 8. Category visualization.

Global **Regulatory T-Cell** Research from 2000 to 2015: A Bibliometric Analysis. YinZongyi ,ChenDongying,LiBaifeng. *PLoS ONE 11(9): e0162099*. IF=3.057(2015) MULTIDISCIPLINARY SCIENCES **Q1**

Keywords	Year	Strength	Begin	End	2000 - 2015
enteropathy	2000	9.6852	2005	2010	
transcription factor foxp3	2000	38.9286	2005	2007	
induced tnf receptor	2000	8.3163	2005	2009	
self	2000	10.5711	2006	2008	
interleukin 2	2000	10.8911	2006	2008	
metastatic melanoma	2000	2.982	2006	2007	
cuttingedge	2000	6.6305	2006	2009	
dendriticcell	2000	5.1785	2006	2007	
tryptophan catabolism	2000	5.4894	2007	2010	
rapamycin	2000	4.0877	2007	2009	
multiple sclerosis patient	2000	4.9941	2007	2008	
phase i trial	2000	4.7889	2008	2010	
lamina propria	2000	4.6267	2008	2011	
autoimmune inflammation	2000	5.9141	2008	2009	
il 23	2000	6.1694	2008	2009	
gene therapy	2000	2.9056	2008	2009	
prognostic factor	2000	4.4437	2009	2011	
granzyme b	2000	3.2233	2009	2010	
ror gamma t	2000	7.2107	2010	2011	
mediated suppression	2000	5.3458	2010	2011	
follow up	2000	2.9313	2012	2015	
pathogenic t(h)17 cell	2000	8.8281	2013	2015	
acute kidney injury	2000	5.5831	2013	2015	
c reactive protein	2000	2.9339	2013	2015	
diet induced obesity	2011	2.2232	2014	2015	

Fig 9. 2000

Fig 10. Top 25 keywords with the strongest citation bursts in articles related to regulatory T cell (Treg) research published from 2000 to 2015.

Visualization of International **Energy Policy** Research. Xiaoling Wang, Jatin Nathwani and Chunyou Wu. *Energies 2016, 9, 72*; doi:10.3390/en9020072. IF=2.077(2015), ENERGY & FUELS **Q2**

Table 2. Burst terms with time span during 1960–2010.

Begin	End	Burst Term	Begin	End	Burst Term
1961	1974	international control	1978	1980	western energy policy
1962	1977	US foreign policy	1979	1988	energy policy modeling
1964	1967	4th-republic	1980	2000	energy economics
1964	1980	atomic energy policy	1980	1987	energy-issues
1971	1990	national energy policy	1980	1983	Soviet energy system
1972	1990	national policy	1981	1984	Soviet energy technology
1975	1983	government policy	1985	1986	business-gov relation
1975	1986	Canadian energy policy	1985	1989	international perspective
1975	1996	nuclear energy policy	1987	1988	forming economic policy
1975	1976	policy execution	1987	1990	fossil fuel policy
1975	1978	policy making	1993	1994	energy policy act
1975	1992	US energy policy	1993	1993	energy technology policy
1975	1982	world energy policy	1993	1997	market failure
1976	1990	policy analysis	1994	1998	developing countries
1977	1992	energy planning	1995	2004	environmental policy
1977	1988	energy policy analysis	1997	2005	energy source
1977	1994	Swedish energy policy	2000	2001	energy policy
1978	1995	energy conser. policy	2006	-	climate policy
1978	1980	new dimension	2009	-	energy security
1978	1978	Carter adm. approach	2009	-	Chinese government
1978	1993	UK energy policy	2009	-	climate change

Table 4. High frequency and centrality terms during each five years.

Time Span	High-Frequency & Centrality Terms
1961–1965	international control; European industrial-policy; Atlantic energy policy
1966–1970	4th republic; energy policy; economic policy; common European energy policy; atomic era; economic comparison
1971–1975	energy policy; national energy policy; national policy; atomic energy; Americas energy future; policy execution; policy making; energy policy project
1976–1980	national energy policy; Carter administration approach; policy execution; policy making; United States energy policy; energy policy; world energy policy; new dimension; western energy policy; United States foreign policy; Soviet foreign policy; energy planning
1981–1985	United States energy policy; energy policy; national energy policy; policy analysis; today's problems; Soviet energy technology; yesterday's solution; energy issues; energy economics; business-government relation
1986–1990	fossil fuel policy; forming economic policy; development policy; coal technology; national energy policy; United States energy policy; energy policy analysis; energy conservation policy
1991–1995	energy policy; environmental policy; energy efficiency; energy policy act; nuclear power; developing countries; CO_2 emissions; energy conservation policy; energy technology policy; postwar Japan; developing countries; market failure; energy markets; policy implications
1996–2000	energy policy; energy efficiency; renewable energy; European union; energy consumption; energy sector; developing countries; climate change; economic growth; renewable energy source; renewable energy technology; electricity generation; energy system
2001–2005	energy policy; renewable energy; energy efficiency; natural gas; energy sector; sustainable development; environmental policy; nuclear power; national energy policy; energy source; climate change; energy consumption
2006–2010	energy policy; renewable energy; energy efficiency; climate change; renewable energy source; energy consumption; energy security; energy resources; sustainable energy; renewable energy policy; public policy; policy instruments; energy supply; climate policy; European union; electricity generation; natural gas

A scientometrics review on **nonpoint source pollution** research. Cuiyun Xiang, Yuan Wang, Huiwen Liu. *Ecological Engineering* 99 (2017) 400–408. IF=2.74(2015), ECOLOGY/ ENGINEERING/ENVIRONMENTAL **Q2**

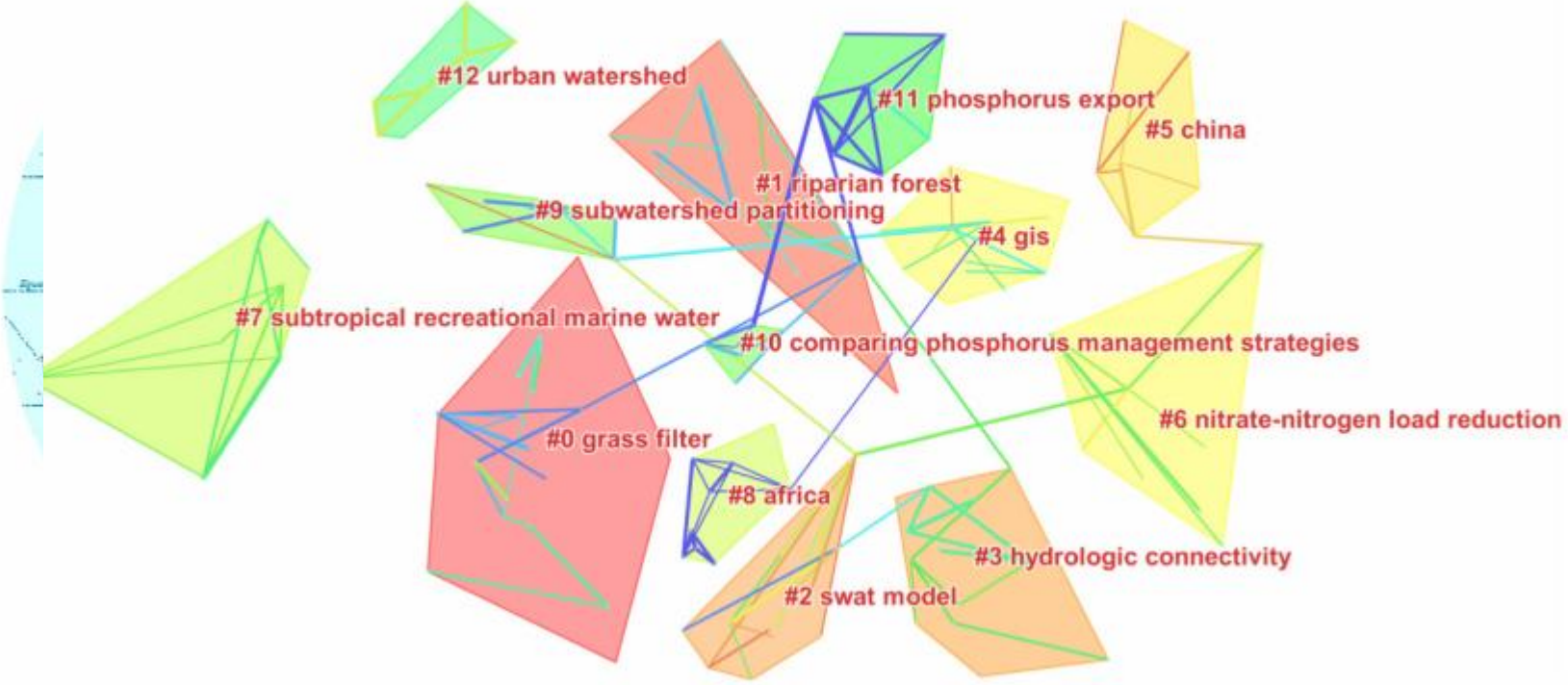


Fig. 9. Main references cluster in the field of nonpoint source pollution.

Fig. 8. Map of important keyword involved in nonpoint source pollution.

Evolutionary trend analysis of **nanogenerator research** based on a novel perspective of phased bibliographic coupling. Munan Lia, Alan L. Porter, Zhong Lin Wang. Nano Energy 34 (2017) 93–102. IF=11.553(2015), CHEMISTRY, PHYSICAL , MATERIALS SCIENCE, MULTIDISCIPLINARY , NANOSCIENCE & NANOTECHNOLOGY , PHYSICS, APPLIED. **Q1**

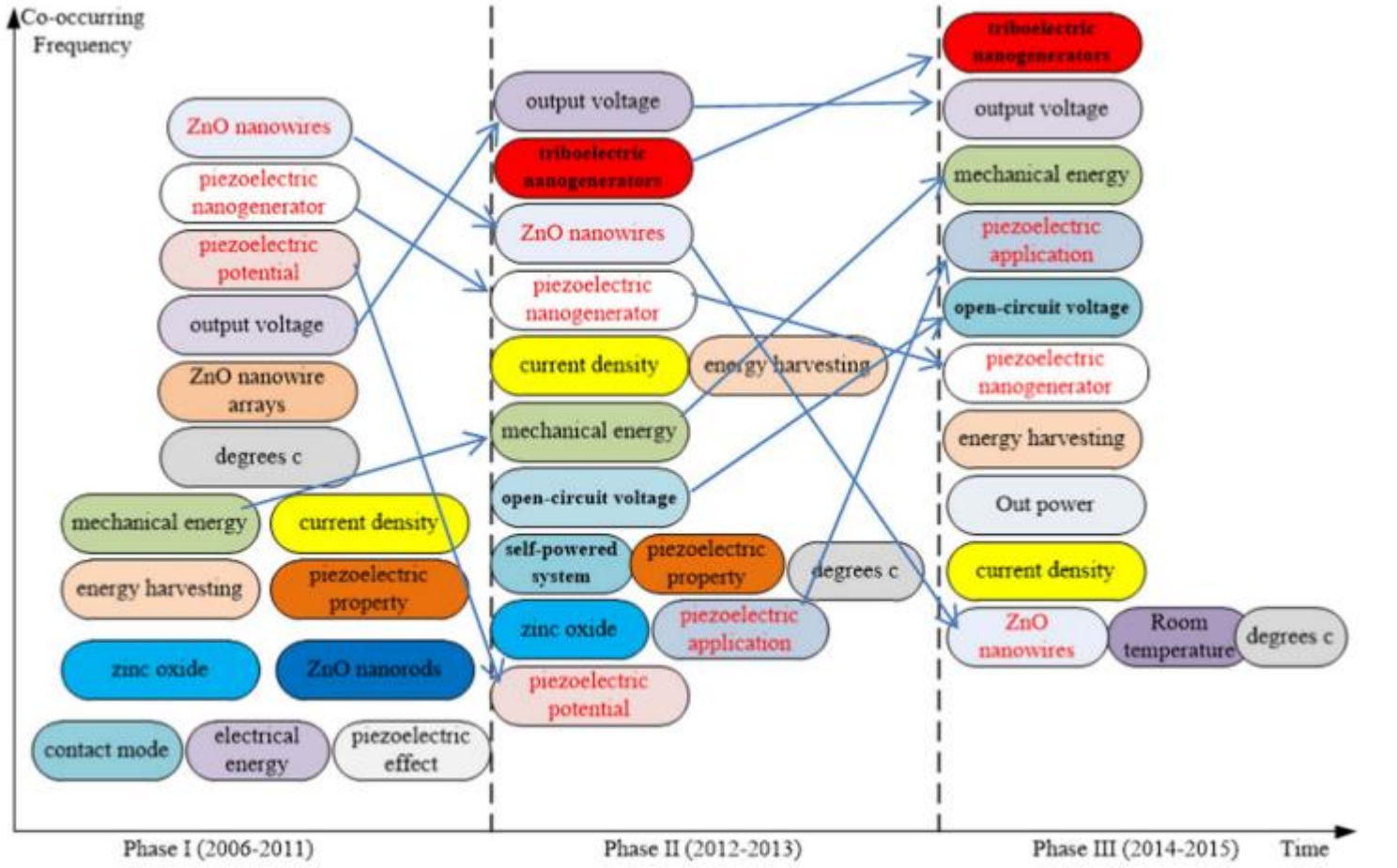


Fig. 3. Top 10 terms with highest frequency of co-occurrence in three phases.

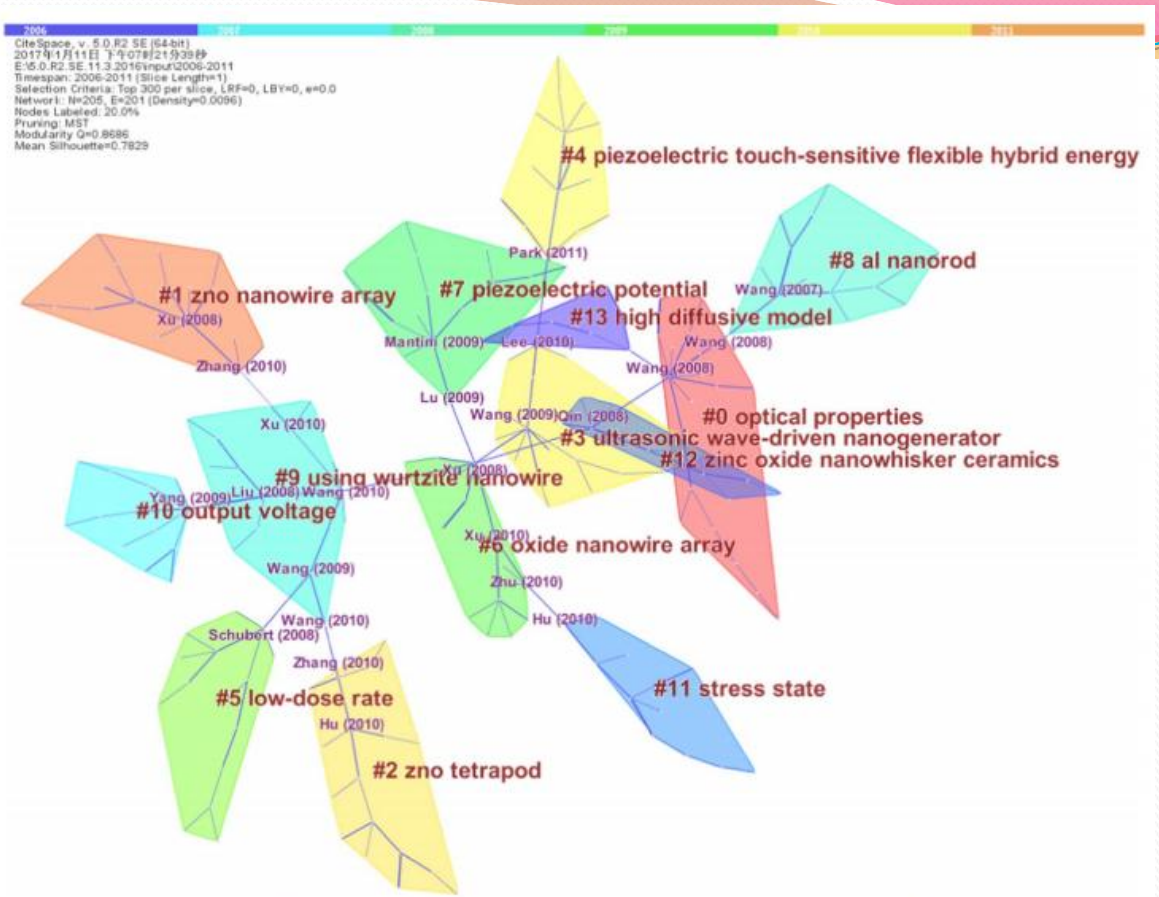


Fig. 4. Bibliographic coupling analysis of the literature of nanogenerator in phase I (2006–2011)**.

Top 5 highest centrality articles in Fig. 4.

#	centrality	Article
1	1.45	Xu S., Wei Y., Liu J., Yang R., & Wang ZL. (2008). Integrated multilayer nanogenerator fabricated using paired nanotip-to-nanowire brushes. Nano letters, 8 (11), 4027–4032.
2	1.11	Wang X., Wang ZL. (2010). Mechanical Energy Harvesting Using Wurtzite Nanowires. In Nano-Bio-Electronic, Photonic and MEMS Packaging (pp. 185–216). Springer US.
3	0.77	Qin Y., Wang X., Wang ZL. (2008). Microfibre–nanowire hybrid structure for energy scavenging. Nature, 451(7180), 809–813.
4	0.56	Wang ZL., Wang X., Song J., et al. (2008). Piezoelectric Nanogenerators for Self-Powered Nanodevices. IEEE Pervasive Computing, 7(1), 49–55.
5	0.52	Wang ZL. (2009). Energy Harvesting Using Piezoelectric Nanowires–A Correspondence on "Energy Harvesting Using Nanowires?". Advanced Materials, 21 (13), 1311–1315.

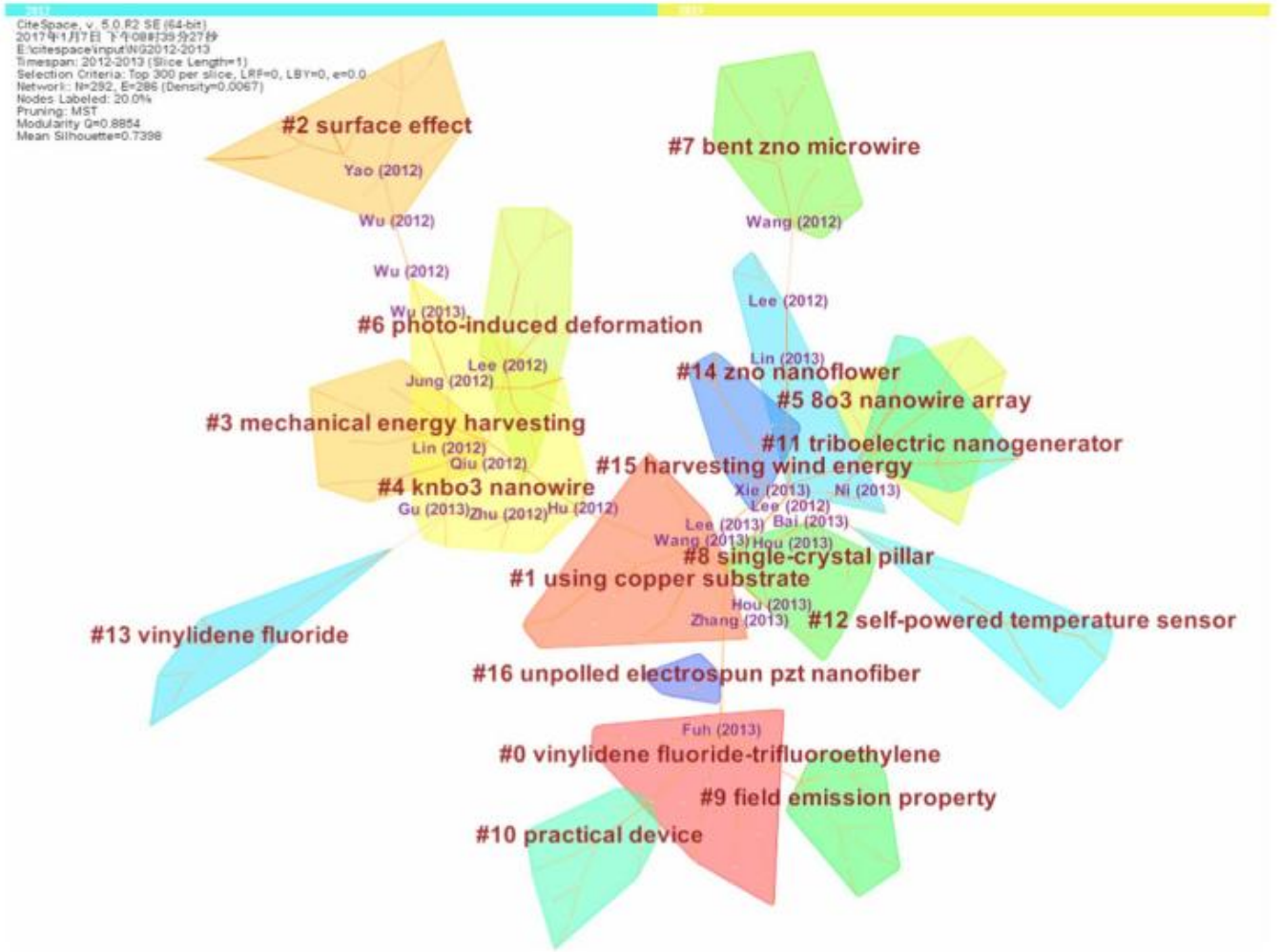


Fig. 5. Bibliographic coupling analysis of the relevant literature in phase II (2012–2013).

Top 5 highest centrality articles in Fig. 5.

#	Centrality	Article
1	1.49	Lee S., Bae SH., Lin L., et al. (2013). Super-Flexible Nanogenerator for Energy Harvesting from Gentle Wind and as an Active Deformation Sensor. Advanced Functional Materials, 23(19), 2445–2449.
2	0.95	Hu Y., Lin L., Zhang Y., & Wang ZL. (2012). Replacing a Battery by a Nanogenerator with 20 V Output. Advanced Materials, 24(1), 110–114.
3	0.74	Fuh YK., Chen SY., Ye JC. (2013). Massively parallel aligned microfibers-based harvester deposited via in situ, oriented poled near-field electrospinning. Applied Physics Letters, 103(3), 033114.
4	0.62	Hou TC., Yang Y., Lin ZH., et al. (2013). Nanogenerator based on zinc blende CdTe micro/nanowires. Nano Energy, 2(3), 387–393.
5	0.6	Hou TC., Yang Y., Zhang H., Chen, J., et al. (2013). Triboelectric nanogenerator built inside shoe insole for harvesting walking energy. Nano Energy, 2(5), 856–862.

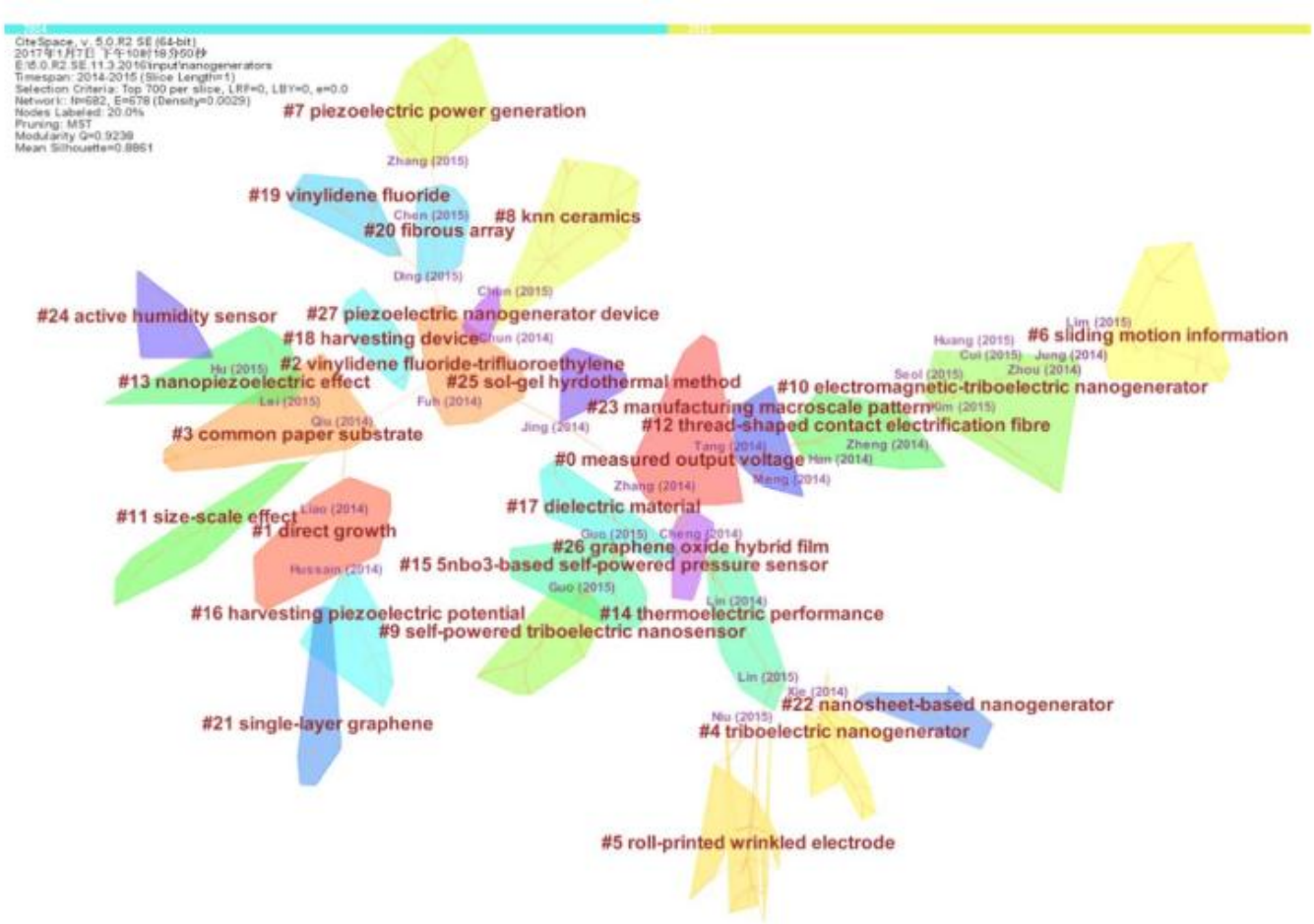


Fig. 6. Bibliographic coupling analysis of the relevant literature in phase III (2014–2015).

Top 5 highest centrality in the Fig. 6

#	Centrality	Article
1	1.33	Zhang C., Zhou T., Tang, W., Han C., et al. (2014). Rotating-Disk-Based Direct-Current Triboelectric Nanogenerator. Advanced Energy Materials, 4(9).
2	1.32	Fuh YK., Ye JC., Chen, PC., et al. (2014). A highly flexible and substrate-independent self-powered deformation sensor based on massively aligned piezoelectric nano-/microfibers. Journal of Materials Chemistry A, 2(38), 16101–16106.
3	1.03	Jing Q., Zhu G., Bai P., et al. (2014). Case-encapsulated triboelectric nanogenerator for harvesting energy from reciprocating sliding motion. ACS nano, 8(4), 3836–3842.
4	0.85	Qiu Y., Lei J., Yang D., et al. (2014). Enhanced performance of wearable piezoelectric nanogenerator fabricated by two-step hydrothermal process. Applied Physics Letters, 104(11), 113903.
5	0.62	Cheng G., Lin ZH., Du Z., & Wang ZL. (2014). Increase Output Energy and Operation Frequency of a Triboelectric Nanogenerator by Two Grounded Electrodes Approach. Advanced Functional Materials, 24(19), 2892–2898.

其他领域的应用文献

- Emerging trends and new developments in egenerative medicine: a scientometric update(2000 -- 2014). Chaomei Chen, Rachael Dubin & Meen Chul Kim. Expert Opin. Biol. Ther. (2014) 14(9). P1-23.
- Exploring the GIS Knowledge Domain Using CiteSpace. Fangwu Wei, Tony H. Grubesic & Bradley Wade Bishop. The Professional Geographer, 67(3) 2015, pages 374–384.
- Dejian Yu (2015) A scientometrics review on aggregation operator research. *Scientometrics*. DOI 10.1007/s11192-015-1695-2
- Xiaodan Zhou, Guohui Zhao (2015) Global liposome research in the period of 1995–2014: a bibliometric analysis. *Scientometrics*. DOI 10.1007/s11192-015-1659-6
- Ping Xie (2015) Study of international anticancer research trends via coword and document co-citation visualization analysis. *Scientometrics*. DOI 10.1007/s11192-015-1689-0
- Yuqing Fang (2015) Visualizing the structure and the evolving of digital medicine: a scientometrics review. *Scientometrics*. DOI 10.1007/s11192-015-1696-1
- Farshad Madani (2015) 'Technology Mining' bibliometrics analysis: applying network analysis and cluster analysis. *Scientometrics*. DOI 10.1007/s11192-015-1685-4
- Liu, Zhigao; Yin, Yimei; Liu, Weidong; et al. (2015) Visualizing the intellectual structure and evolution of innovation systems research: a bibliometric analysis. *Scientometrics*, 103(1), 135-158. DOI: 10.1007/s11192-014-1517-y
- Knowledge mapping of **hospitality research** – A visual analysis using CiteSpace. Xinjian Li, Emily Ma, Hailin Qu. *International Journal of Hospitality Management 60 (2017) 77–93.*

谢谢！

在线满意度调查

- 网址：https://sojump.com/jq/12360478.aspx

- 扫描二维码