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**Publication and Citation within Norwegian Chemical
Research**

A bibliometrical analysis

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Foreword

This report presents a bibliometric analysis of scientific publishing within Norwegian chemical research. The report is in two sections which use different perspectives on the topic. Terje Bruen Olsen and Aris Kaloudis are the authors.

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Oslo, April 1997

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Director

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1 Introduction

Bibliometric R&D indicators measure the extent of 1) *publishing* in international scientific journals and 2) the extent to which these articles have been referred to or *cited* in other articles in the same journals. The *National Science Indicators On Diskette (NSIOD)* is a database with aggregated publication and citation statistics which cover 92 countries through the period 1981-1995. The articles are classified in 24 fields of science, most of these belong to the natural sciences and technology, however, there are some few in the social sciences. NSIOD is published by the *Institute for Scientific Information, ISI*, in Philadelphia, USA, a commercial enterprise which also publishes the *Science Citation Index* and the *Social Science Citation Index* as well as several other bibliometric products on scientific publishing, etc.

All the fields of science in the NSIOD database are listed below:

Agricultural Sciences
Astrophysics
Biology & Biochemistry *
Chemistry *
Clinical Medicine
Computer Science
Ecology/Environment
Economics & Business
Education
Engineering
Geosciences
Immunology

Law
Materials Science
Mathematics
Microbiology
Molecular Biology & Genetics *
Multidisciplinary
Neuroscience
Pharmacology
Physics
Plant & Animal Science
Psychology/Psychiatry
Social Sciences, general

Chemistry is the field of science which is central to this study. *Biochemistry* is not included here but in the category *Biology & Biochemistry*. *Molecular Biology & Genetics* are also viewed as relevant fields of science in connection with an analysis of chemical research. The three fields marked with an "*" above have been selected for this study¹. As their names indicate, the last two mentioned fields also include areas other than chemistry. On the other hand, topics of relevance for chemical research may also appear in fields other than

¹ These three categories are also part of the evaluation of *Swedish* basic research within chemistry. Cf. the *International Review of Swedish Research in Fundamental Chemistry 1995*, Naturvetenskapliga forskningsrådet 1995.

the ones selected here. However, the three selected fields cover most of the research within the area of chemistry².

A field of science is defined by the journals which are classified under that field. Each journal is generally classified under *one* field³. All articles in a journal are regarded as belonging to that journal's field of science⁴. In the database which is the foundation for this analysis it is not possible to split up the fields of learning into more narrow categories⁵. The data are aggregated at a national level which makes it possible to do comparisons between countries for different fields of science. Using NSIOD it is not possible to break down national data to individual institutions or institutes⁶.

In the following we will look at the extent of Norwegian publishing in each of the three fields of science: *Chemistry*, *Biology & Biochemistry*, and *Molecular Biology & Genetics*. The number of articles can be viewed as an indicator of productivity. The number of citations can be an expression of the extent to which the publication has been recognised by, or made visible to, research colleagues. There is general agreement among bibliometricians that extreme care should be given to interpreting publication and citation frequencies as an expression of research *quality*. On the other hand, bibliometric data can be useful as background data in connection with the evaluation of a field of learning or research unit.

In the following - with the help of tables and figures - we will present a survey of the extent of Norwegian publishing within the "chemical" fields, and compare it to publishing activities in a selection of other countries. We will also present data on citation indicators *Citation impact* or *Relative citation impact*, see p. 7.

² Annex 2 contains the classifications of fields of science. The basis of the classification system is also discussed.

³ A few journals have, however, been classified under two fields, see Annex 2..

⁴ There are also exceptions here, see the introduction to Annex 3.

⁵ We have used the standard version of NSIOD. There is also a "deluxe" version where the fields of learning are more narrowly defined in 102 categories. However, NIFU has not bought the "deluxe" version.

⁶ ISI has databases where this is possible, inter al. for all universities in USA. NIFU has built up a special database with basic data from the *Science Citation Index*, which covers all *Norwegian* publications from 1990ff. On the basis of this, Norwegian researchers' publication patterns can be analysed at an institutional, institute and personal level. In addition, this contains information about which journal the articles are published in and about co-authorship, i.e. who publishes with whom.

2 The total period 1981-1995

During the period 1981-1995 more than 8 million articles were published in the journals included in the database. Of these, 45,000 had one or more authors with a Norwegian address. About 12,000 articles, or 24 per cent of all the Norwegian articles were published in journals which are included in one of the three fields of

Table 1 Norwegian articles by field of science 1981-1995.

Field of Science	Number of Norwegian articles	Percentage Norwegian articles of all articles in the field	The field's percentage of all Norwegian articles	The field's percentage of all articles in the world
Agricultural Sciences	955	0,42	2,12	2,87
Astrophysics	351	0,39	0,78	1,13
Biology & Biochemistry	7.137	0,69	15,87	12,86
Chemistry	3.566	0,36	7,93	12,29
Clinical Medicine	12.016	0,76	26,73	19,66
Computer Science	310	0,34	0,69	1,15
Ecology/Environment	1.732	0,87	3,85	2,49
Economics & Business	568	0,48	1,26	1,47
Education	84	0,20	0,19	0,52
Engineering	2.413	0,37	5,37	8,14
Geosciences	2.570	1,26	5,72	2,54
Immunology	1.530	0,97	3,40	1,97
Law	12	0,04	0,03	0,35
Materials Science	683	0,27	1,52	3,13
Mathematics	657	0,47	1,46	1,75
Microbiology	1.491	0,81	3,32	2,29
Molecular Biology & Genetics	1.378	0,52	3,06	3,30
Multidisciplinary	298	0,24	0,66	1,54
Neuroscience	1.723	0,61	3,83	3,53
Pharmacology	1.304	0,55	2,90	2,95
Physics	2.658	0,30	5,91	11,19
Plant & Animal Science	4.594	0,79	10,22	7,28
Psychology/Psychiatry	1.141	0,50	2,54	2,83
Social Sciences, general	1.540	0,63	3,43	3,06

Source: National Science Indicators On Diskette/Institute for Scientific Information

science selected for this study⁷. This corresponds to the worldwide percentage which is 25 per cent. We find similarly percentages in Denmark and Sweden with 26, respectively 27 per cent.

Table 1 shows Norwegian articles within *all fields of science in the database*. "Chemical" fields are in boldface. In Table 2 we look more closely at these, and compare the data for Norway with other countries. The following indicators are presented:

- *All articles* in absolute figures
- Of these, the number of *cited* articles in absolute figures
- Cited articles as a percentage of all articles
- Number of citations in absolute figures
- The *Citation impact*, which is the number of citations divided by the number of articles
- The *Relative citation impact* shows the relation between the field's *Citation impact* in individual countries and the *Citation impact* for the field worldwide when all countries are included (the *Impact base* in the Table). The relative impact for a field in a particular country thus has the value of 1 if the country's articles are cited to the same extent as all of the articles worldwide in the field.

The number of articles of a country is, of course, related to its size. As Table 2 shows, the number of Norwegian articles within the three areas of chemistry is lower than in all other countries with the exception of Iceland.

In *Chemistry*, 3,500 articles were published with the address of a Norwegian author. On average, four of five of these articles were cited in later articles. Sweden published three times as much as Norway, while Denmark published about 50 per cent more articles. See also Figure 1 which shows article production per million inhabitants.⁸ Figure 2 shows the articles in chemistry as a percentage of all countries' articles. For Norway, this is about 8 per cent which is about the same as for the other Nordic countries and USA. The *Citation impact* is lower for Norwegian articles than for the other countries with the exception of Finland and Iceland. This also pertains to the *Relative citation impact*, see Figure 7. For Norway this is 0.91. Norwegian articles are, thus, cited less often than the average for the world's articles in chemistry. Swedish and Danish articles are, in contrast, cited more often; their *Relative citation impact* is 1.29, respectively 1.22.

Figures 3-6 show the number of articles per million capita and their percentages within *Biology & Biochemistry*, and *Molecular Biology & Genetics*. In *Biology & Biochemistry* publication figures for Norway are even lower than they are for chemistry

⁷ The sum of the articles for several fields will be larger than the actual number of articles because some journals belong to several fields of science.

⁸ Population statistics for 1993.

compared to the other Nordic countries (see Table 2). The *Relative citation impact* is also lower, cf. Figure 8. In *Molecular Biology & Genetics* the relation to Denmark and Sweden is about the same as it is in *Biology & Biochemistry*. Here Finland has as much as 80 per cent more articles than Norway. The *Relative citation impact* for Norway in this field is as low as 0.62, or slightly higher than Iceland, cf. Figure 9.

Table 2 Articles and citations within *Chemistry, Biology & Biochemistry* and *Molecular Biology & Genetics* for selected countries. 1981-1995.

Land	Number of articles	Cited articles	% cited articles	Number of citations	Citation impact	Relative citation impact	Impact base
<i>Chemistry</i>							
USA	245.415	204.077	83,2	3.102.328	12,64	1,66	7,63
Japan	109.368	86.260	78,9	796.152	7,28	0,95	7,63
Germany	98.332	76.707	78,0	781.031	7,94	1,04	7,63
UK	71.407	57.903	81,1	653.475	9,15	1,20	7,63
France	56.776	45.287	79,8	458.200	8,07	1,06	7,63
Italy	34.317	27.516	80,2	249.123	7,26	0,95	7,63
Holland	17.621	14.706	83,5	175.746	9,97	1,31	7,63
Sweden	11.924	9.587	80,4	117.448	9,85	1,29	7,63
Denmark	5.191	4.209	81,1	48.253	9,30	1,22	7,63
Finland	3.986	2.968	74,5	21.022	5,27	0,69	7,63
Norway	3.566	2.773	77,8	24.775	6,95	0,91	7,63
Iceland	60	51	85,0	401	6,68	0,88	7,63
<i>Biology & Biochemistry</i>							
USA	430.250	375.338	87,2	8.688.779	20,19	1,37	14,72
Japan	104.448	84.830	81,2	1.168.310	11,19	0,76	14,72
UK	96.814	80.832	83,5	1.474.959	15,23	1,03	14,72
Germany	63.820	53.170	83,3	892.556	13,99	0,95	14,72
France	59.358	47.195	79,5	705.660	11,89	0,81	14,72
Italy	36.666	27.971	76,3	329.059	8,97	0,61	14,72
Holland	27.096	22.859	84,4	369.644	13,64	0,93	14,72
Sweden	27.034	23.007	85,1	433.409	16,03	1,09	14,72
Denmark	13.210	11.165	84,5	183.776	13,91	0,94	14,72
Finland	9.289	7.736	83,3	111.682	12,02	0,82	14,72
Norway	7.137	5.940	83,2	82.037	11,49	0,78	14,72
Iceland	207	155	74,9	2.159	10,43	0,71	14,72
<i>Molecular Biology & Genetics</i>							
USA	119.954	105.504	88,0	3.461.791	28,86	1,37	21,10
UK	27.979	24.051	86,0	635.610	22,72	1,08	21,10
Germany	22.077	18.478	83,7	498.724	22,59	1,07	21,10
Japan	20.219	16.353	80,9	264.441	13,08	0,62	21,10
France	19.296	15.354	79,6	323.124	16,75	0,79	21,10
Italy	8.883	7.033	79,2	104.500	11,76	0,56	21,10
Holland	7.528	6.539	86,9	150.997	20,06	0,95	21,10
Sweden	5.329	4.608	86,5	102.353	19,21	0,91	21,10
Denmark	2.604	2.257	86,7	46.751	17,95	0,85	21,10
Finland	2.436	2.107	86,5	42.453	17,43	0,83	21,10
Norway	1.378	1.149	83,4	17.901	12,99	0,62	21,10
Iceland	78	64	82,1	901	11,55	0,55	21,10

Source: National Science Indicators On Diskette/Institute for Scientific Information

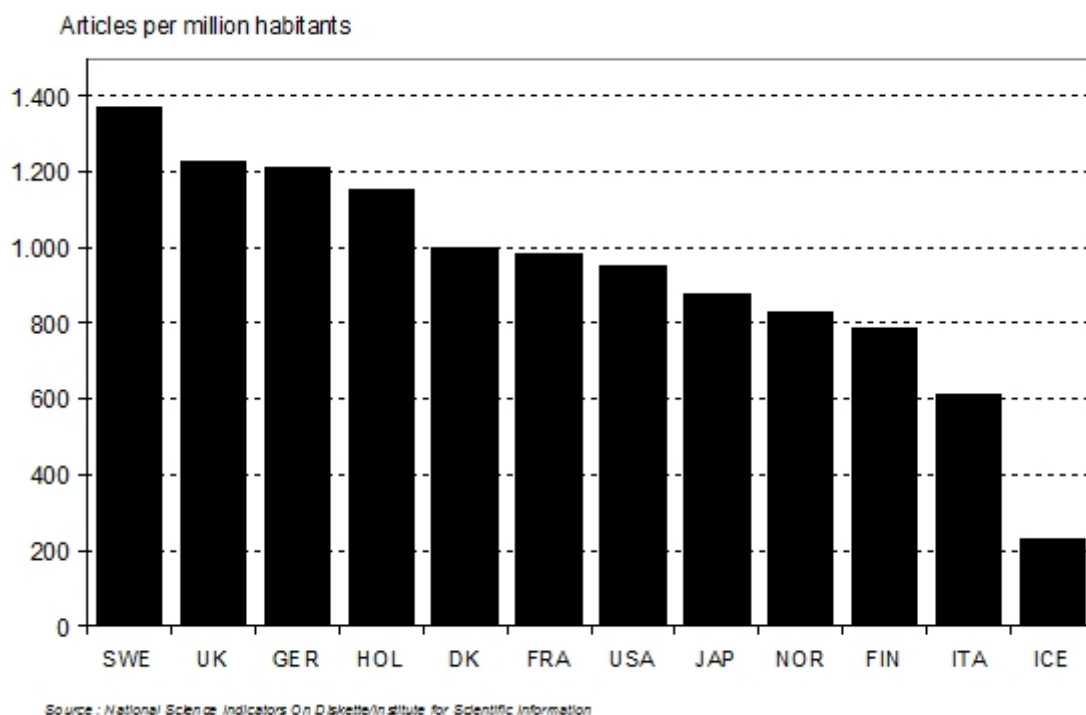


Fig. 1 Articles per million inhabitants within *Chemistry* in selected countries 1981-95.

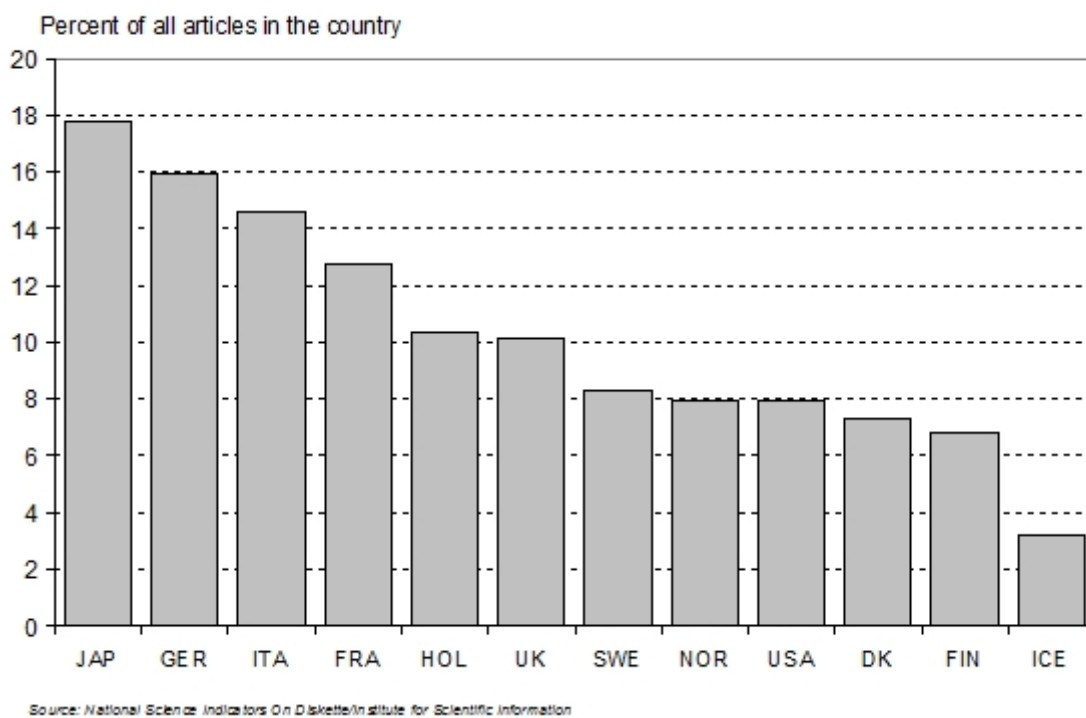


Fig. 2 Articles within *Chemistry* as a percentage of each country's total articles 1981-95.

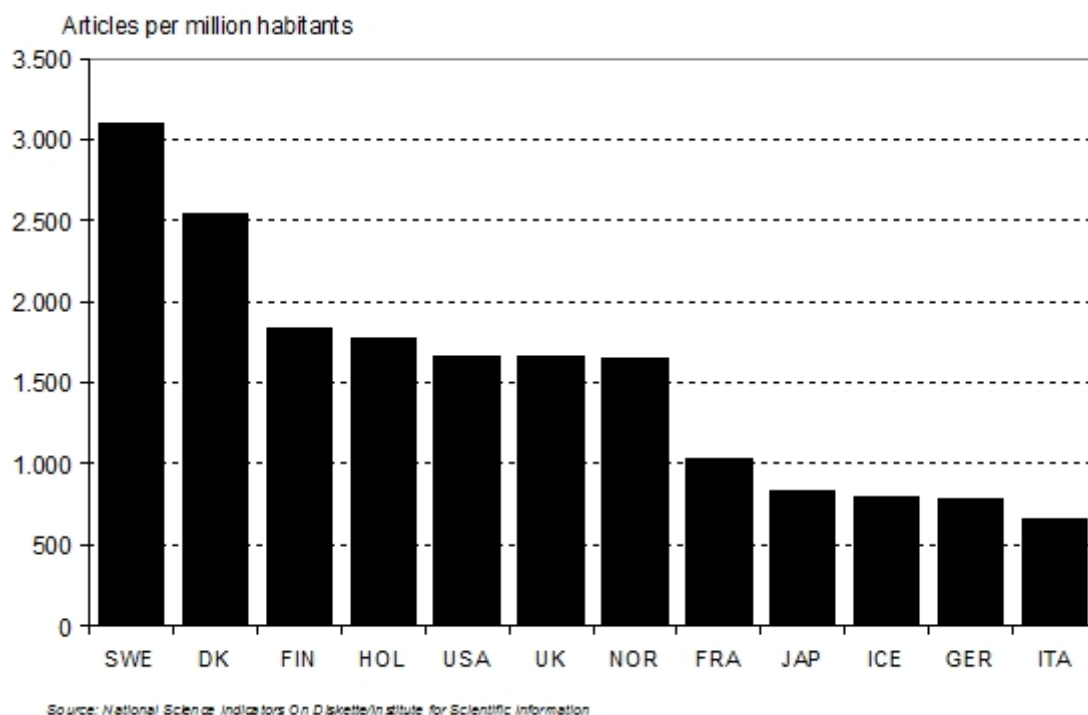


Fig. 3 Articles per million inhabitants within *Biology & Biochemistry* in selected countries 1981-95.

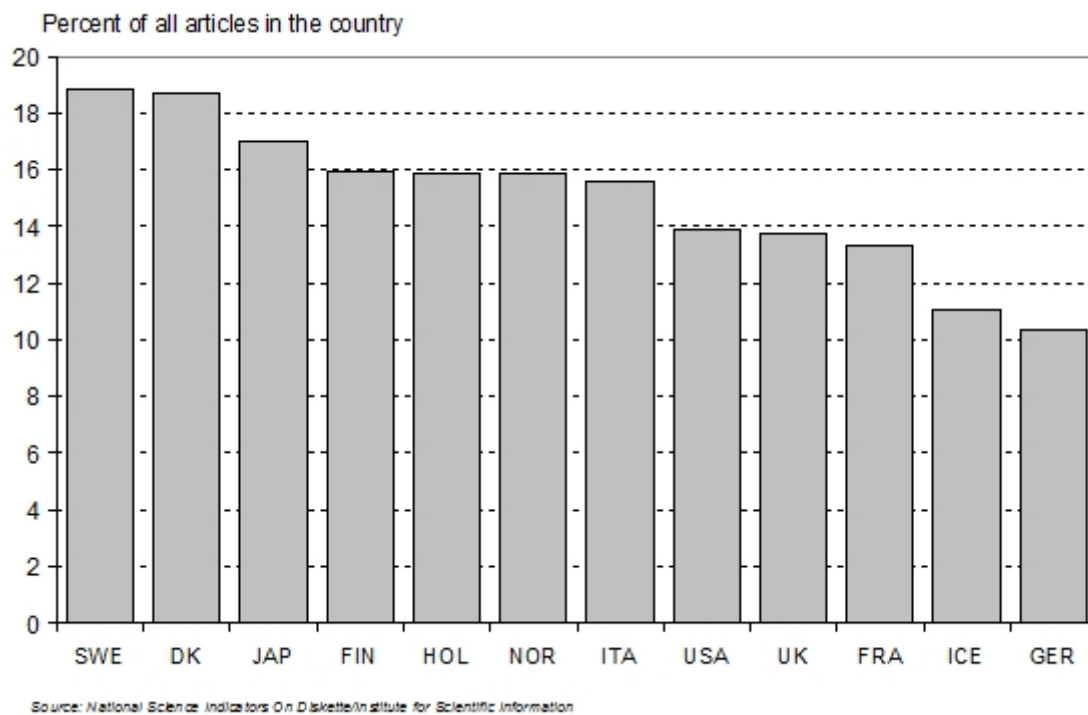


Fig. 4 Articles within *Biology & Biochemistry* as a percentage of each country's total articles 1981-95.

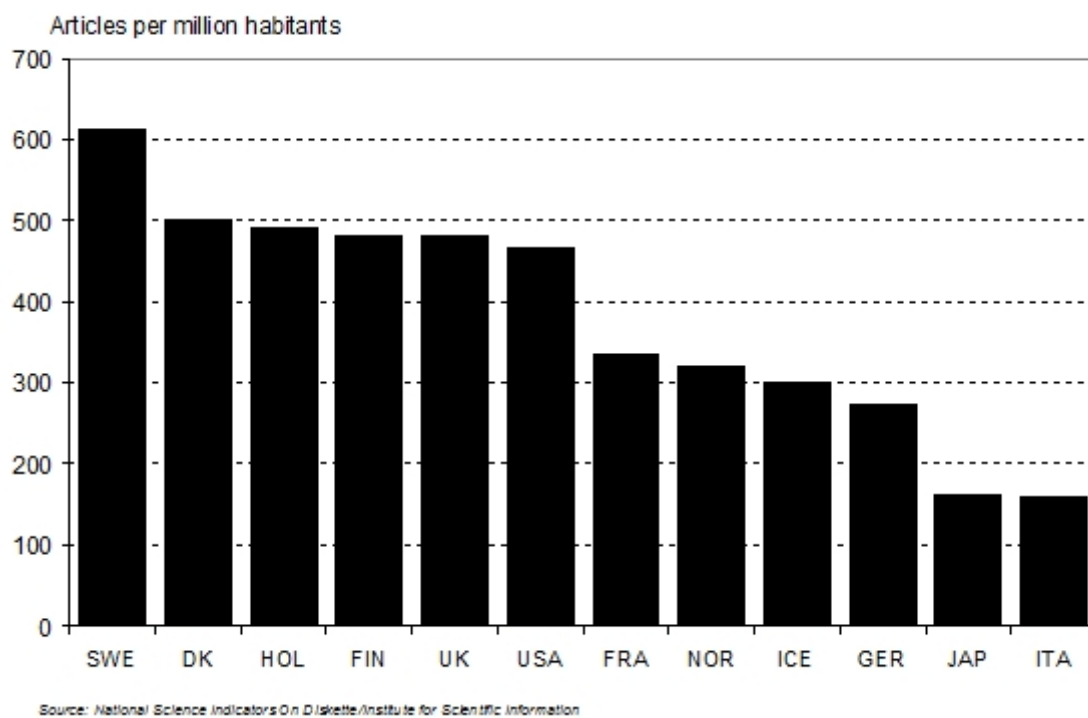


Fig. 5 Articles per million inhabitants within *Molecular Biology & Genetics* in selected countries 1981-95.

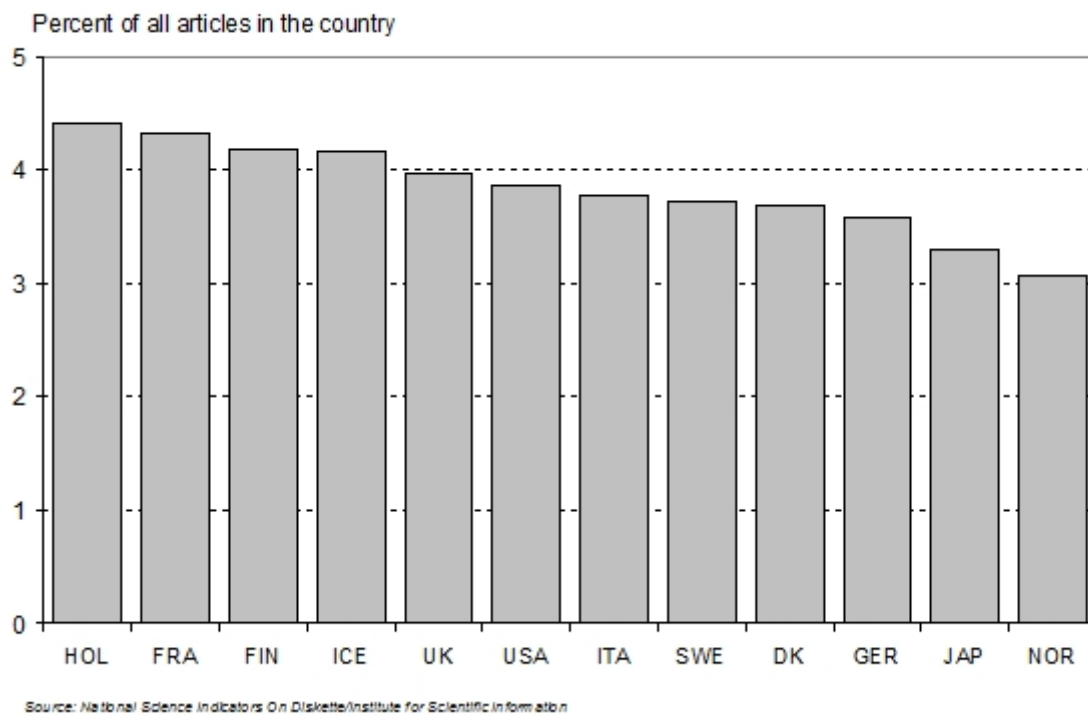


Fig. 6 Articles within *Molecular Biology & Genetics* as a percentage of each country's total articles 1981-95.

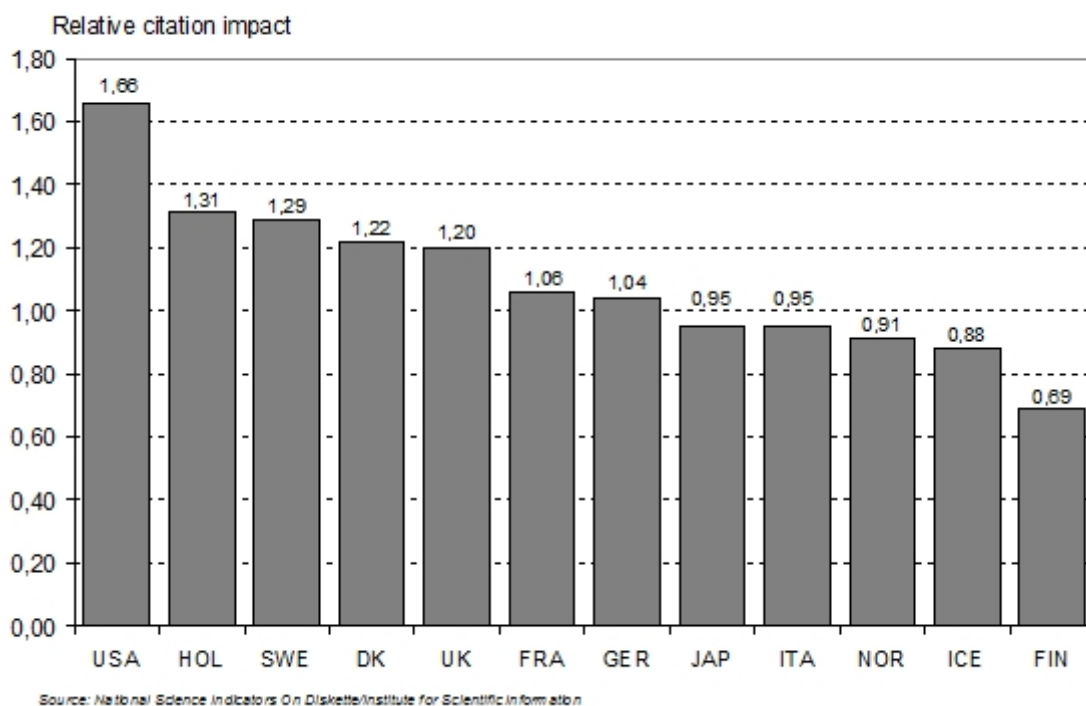


Fig. 7 Relative citation impact within *Chemistry* in selected countries 1981-95.

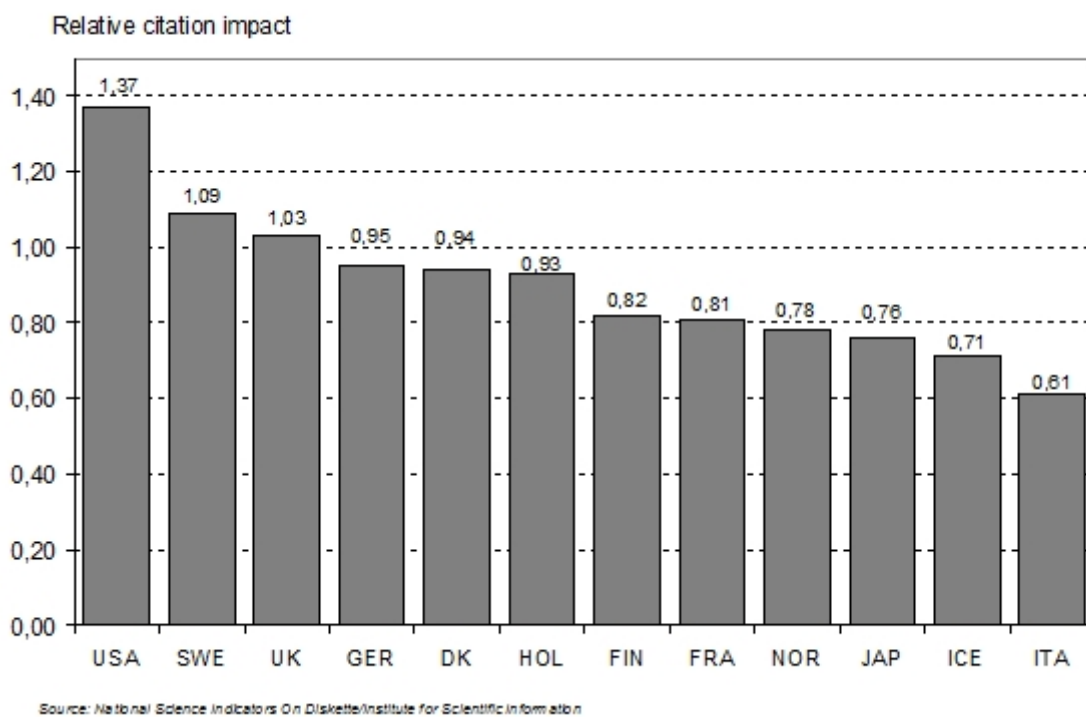


Fig. 8 Relative citation impact within *Biology & Biochemistry* in selected countries 1981-95.

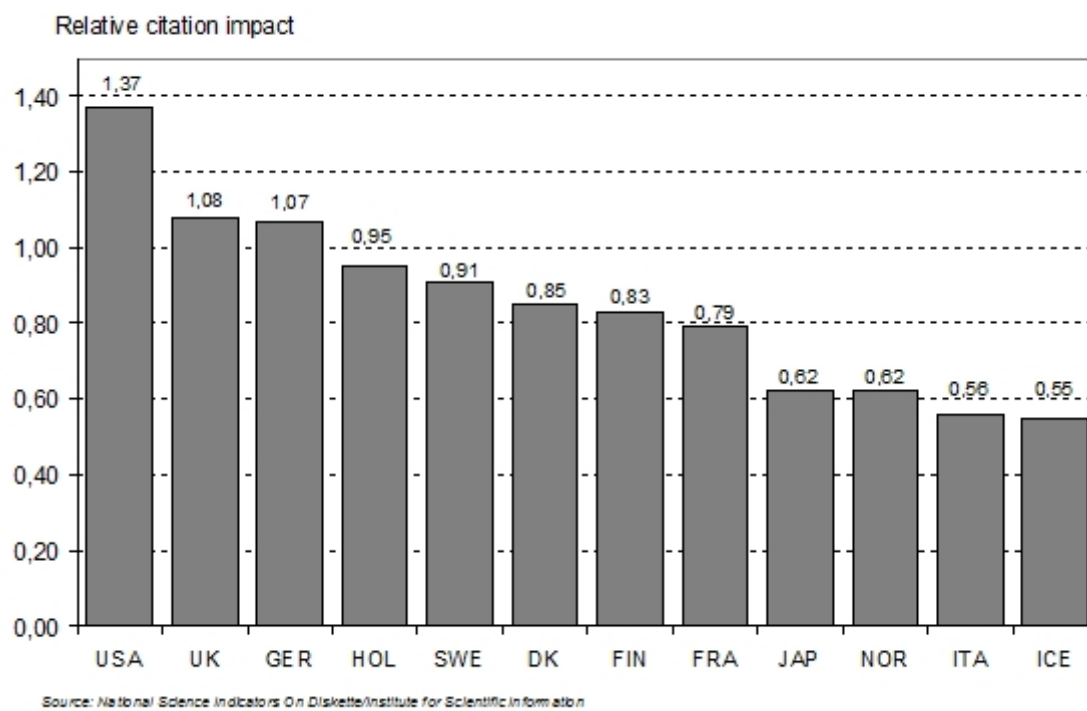


Fig. 9 Relative citation impact within *Molecular Biology & Genetics* in selected countries 1981-95.

3 Development over time

Figures 10-15 show development in Norway for the 15-year period 1981-1995. In order to avoid focus on coincidental outcomes we have chosen to present accumulated figures for 5-year periods.

The number of Norwegian articles increased during the period for all three fields of science, cf. Figure 10. At the end of the period we see that there is an increase in *Chemistry*. (Here we will not comment on the other two fields, but refer to the figures.) Chemistry's percentage of the total article production also increased, cf. Figure 11. The citation frequency in chemistry shows a decreasing tendency until the middle of the period. The increased publication frequency seems to reverse this trend: at the end of the period there is a weak increase in both the *Citation impact* and the *Relative citation impact*, cf. Figures 12 and 13. As we see, there are considerable differences in citation frequency among the three fields. These differences are not peculiar to Norway. Table 2 shows that on average articles in *Molecular Biology & Genetics* are cited three times as often as articles in *Chemistry*, and *Biology and Biochemistry* twice as often (impact base).

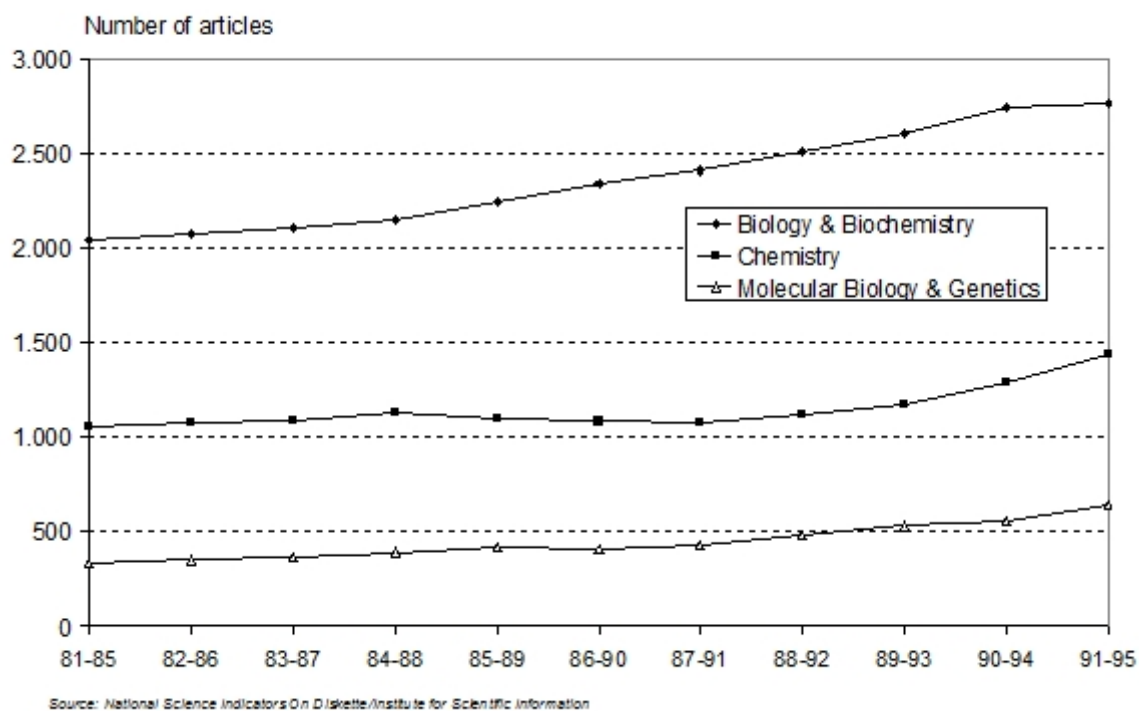


Fig. 10 Norwegian articles within *Chemistry*, *Biology & Biochemistry* and *Molecular Biology & Genetics* 1981-95. Accumulated figures for 5-year periods.

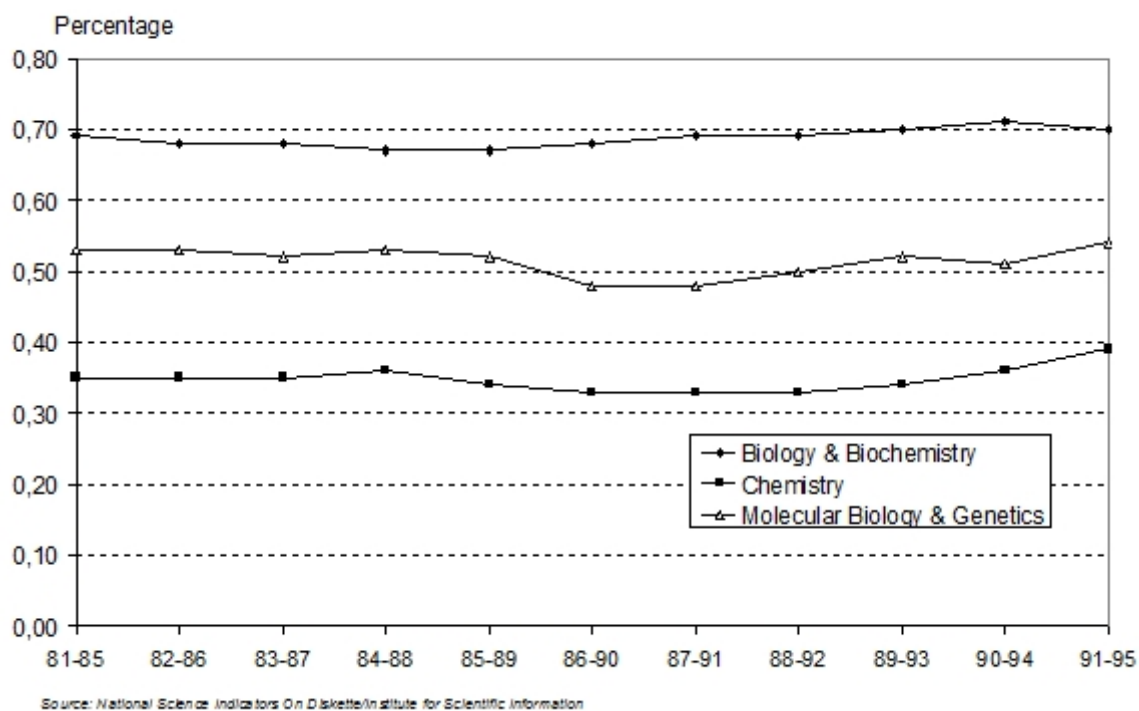


Fig. 11 Percentage of Norwegian articles of the world's production within *Chemistry*, *Biology & Biochemistry* and *Molecular Biology & Genetics* 1981-95. Acc. figures for 5-year periods.

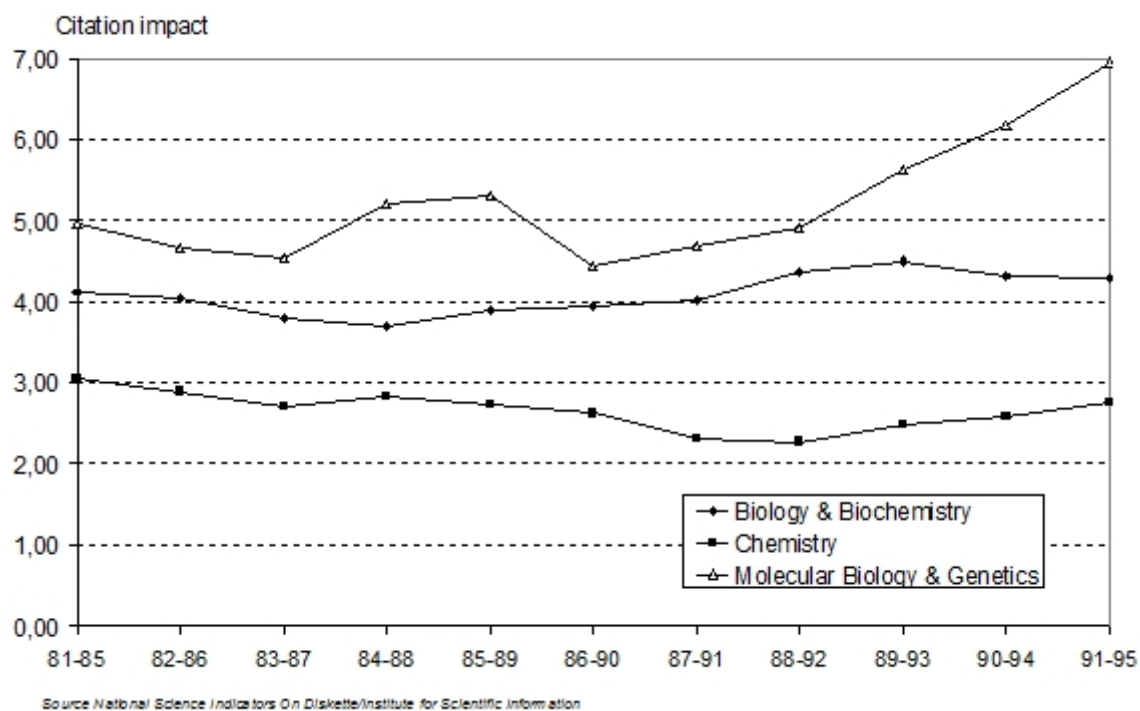


Fig. 12 Citation impact for Norwegian articles within *Chemistry*, *Biology & Biochemistry* and *Molecular Biology & Genetics* 1981-95. Accumulated figures for 5-year periods.

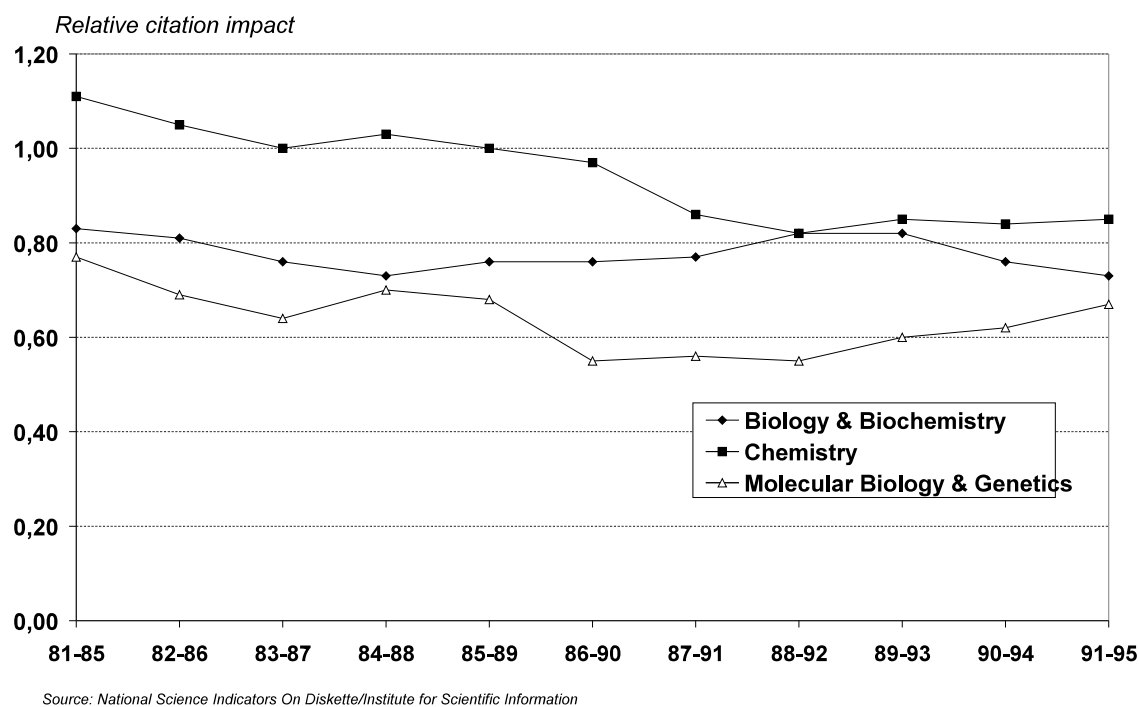


Fig. 13 Relative citation impact for Norwegian articles within *Chemistry*, *Biology & Biochemistry* and *Molecular Biology & Genetics* 1981-95. Accumulated figures for 5-year periods.

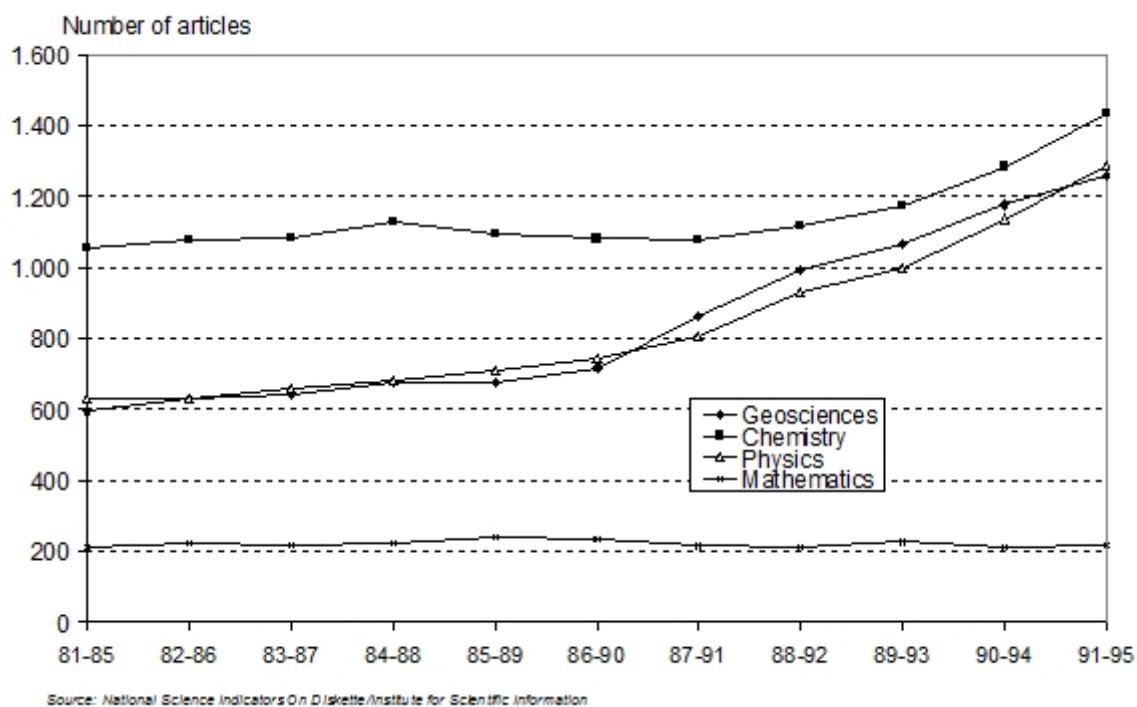


Fig. 14 Norwegian articles within *Chemistry*, *Geosciences*, *Physics* and *Mathematics* 1981-95. Accumulated figures for 5-year periods.

In Figure 14 we compare *Chemistry* with other natural science fields. There are fewer Norwegian articles in journals which are classified under *Geosciences* and *Physics* than under *Chemistry*. However, *Geosciences* and *Physics* show considerable growth from the middle of the 15-year period 1981-1995. At the end of the period the number of Norwegian articles is about the same in all three fields. Within *Mathematics*, in contrast, the level is about the same during the whole period. The development in the *Relative citation impact* for the same fields is shown in Figure 15.

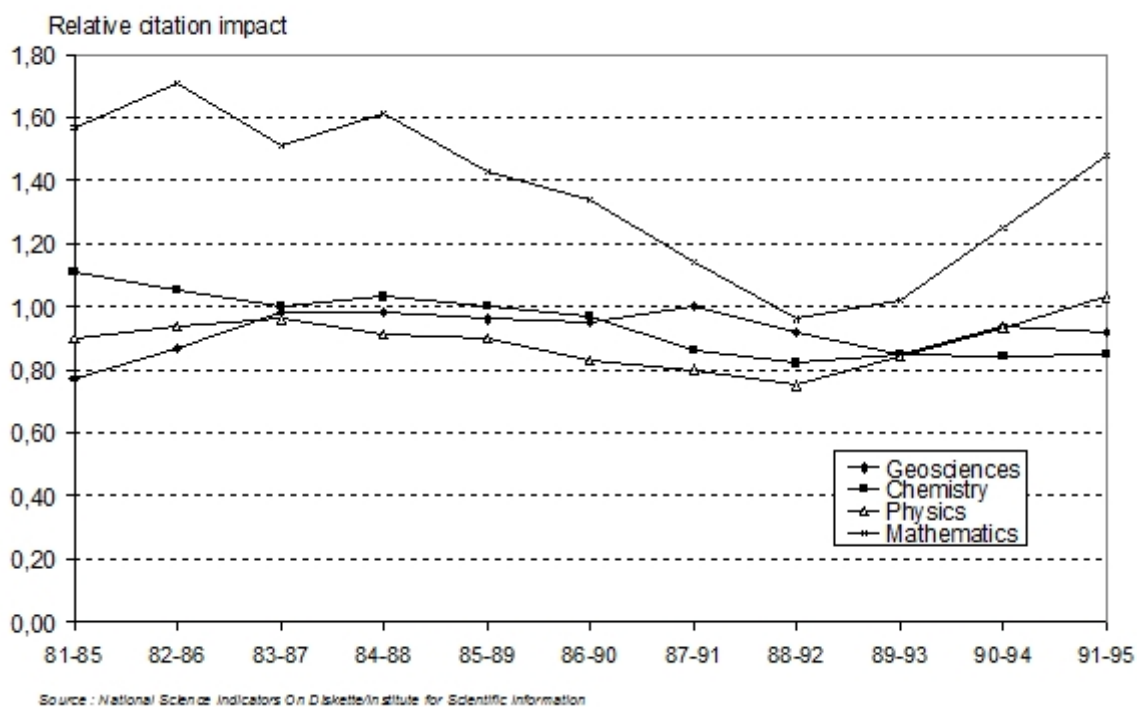


Fig. 15 Relative citation impact for Norwegian articles within *Chemistry*, *Geosciences*, *Physics* and *Mathematics* 1981-95. Accumulated figures for 5-year periods.

Figures 16-18 show the development of the *Relative citation impact* in all the countries we have compared Norway to from 1981 to 1995 for the three fields of science: *Chemistry*, *Biology & Biochemistry*, and *Molecular Biology & Genetics*.

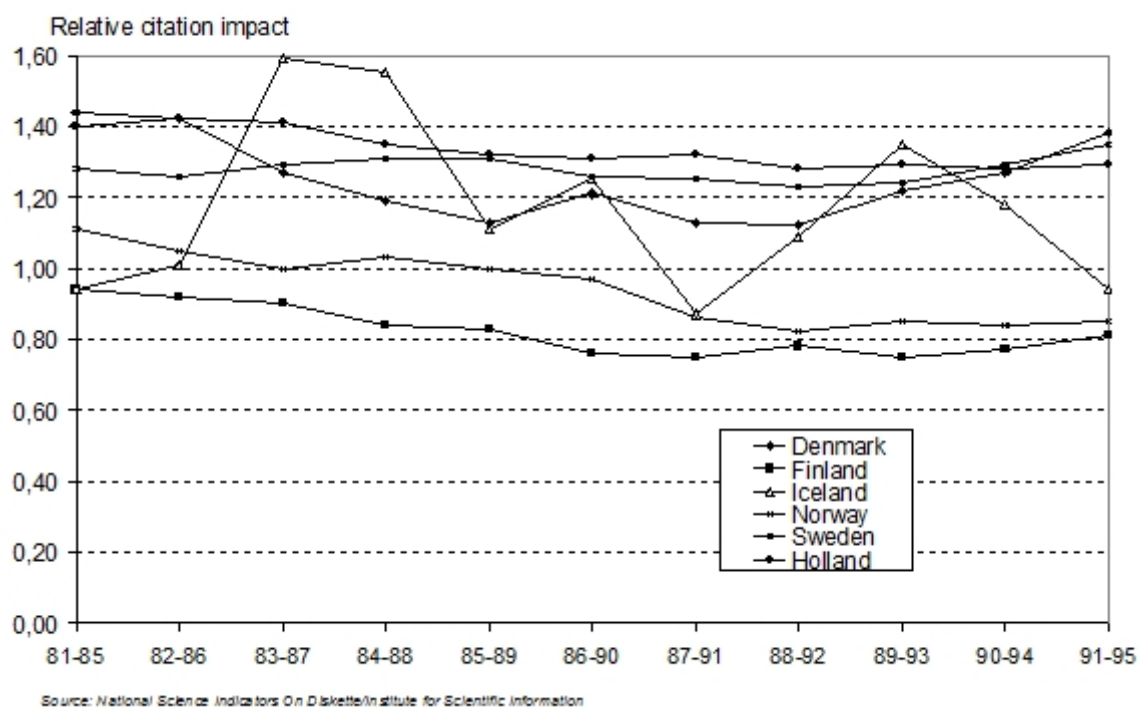


Fig. 16A Relative citation impact within *Chemistry* for selected countries 1981-95. Accumulated figures for 5-year periods.

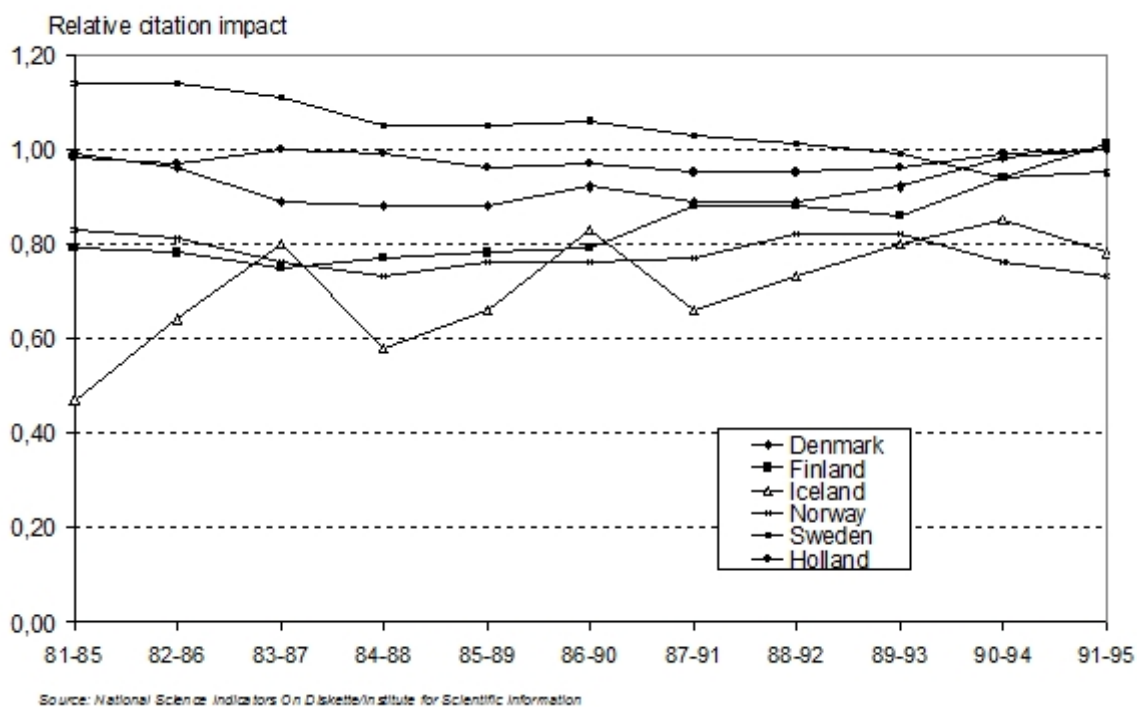


Fig. 17A Relative citation impact within *Biology & Biochemistry* for selected countries 1981-95. Accumulated figures for 5-year periods.

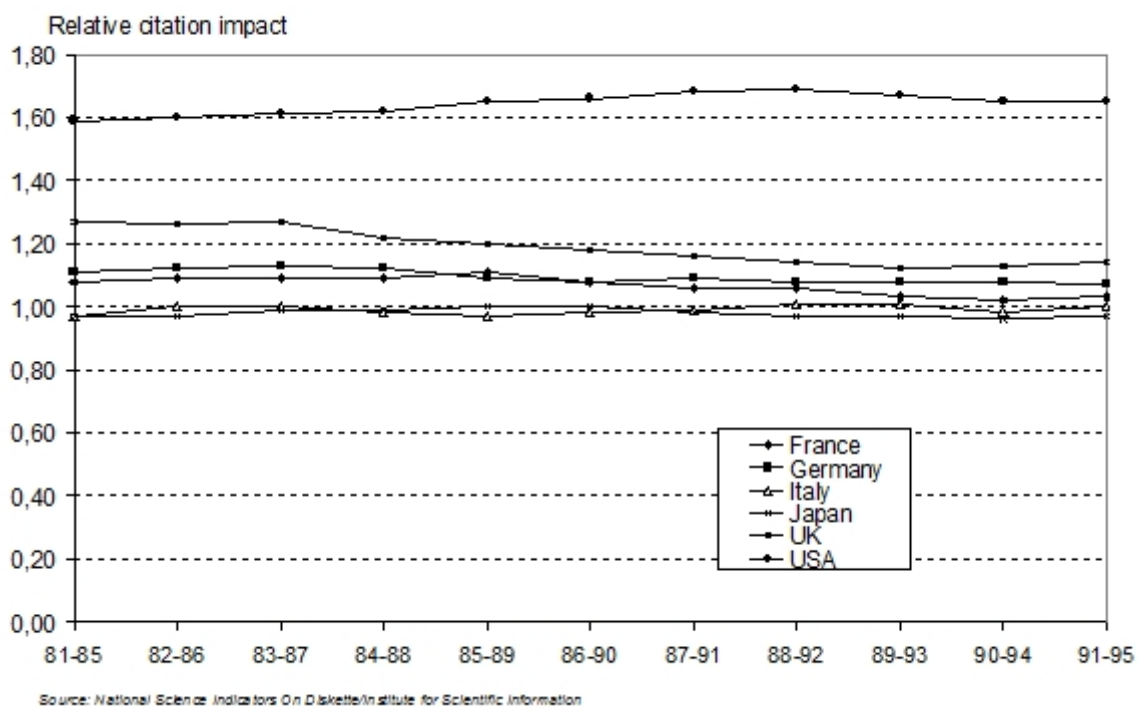


Fig. 16B Relative citation impact within *Chemistry* for selected countries 1981-95. Accumulated figures for 5-year periods.

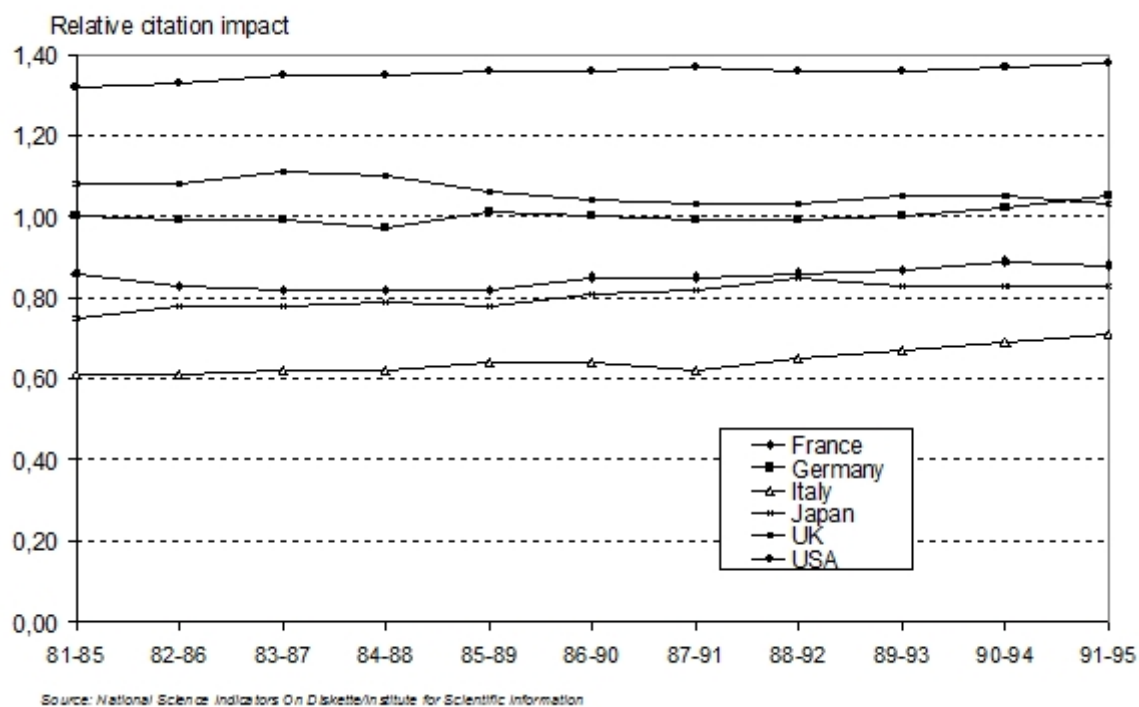


Fig. 17B Relative citation impact within *Biology & Biochemistry* for selected countries 1981-95. Accumulated figures for 5-year periods.

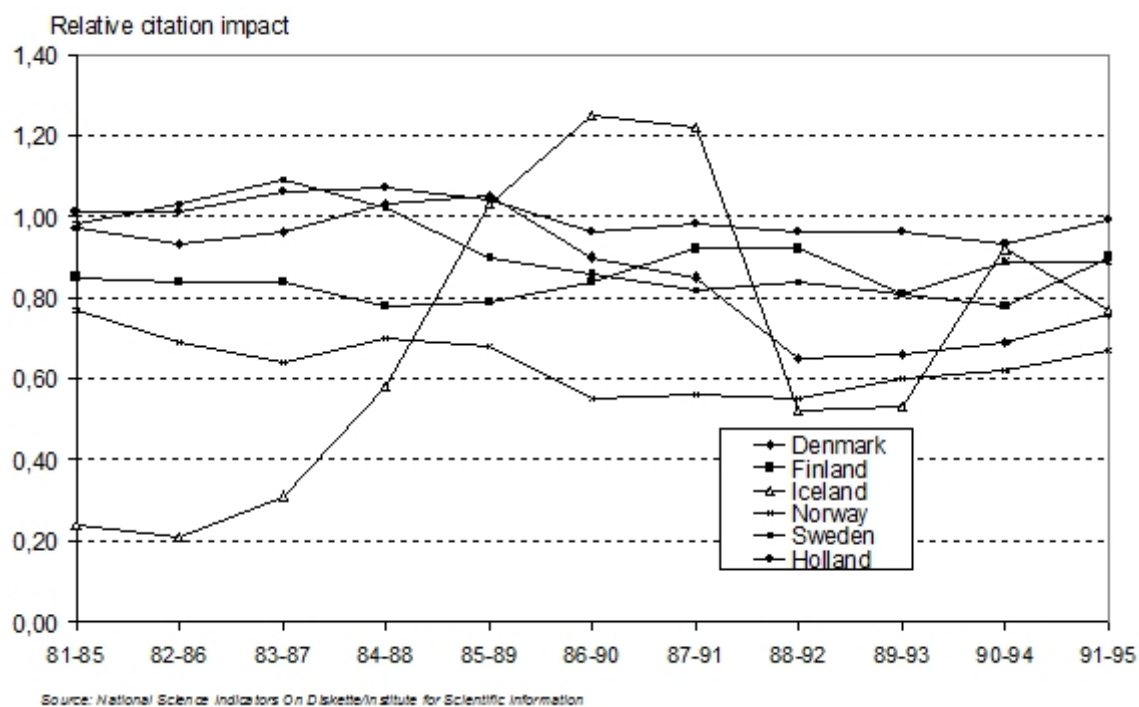


Fig. 18A Relative citation impact within *Molecular Biology & Genetics* for selected countries 1981-95. Accumulated figures for 5-year periods.

Data and tables in NSIOD

Annex 1

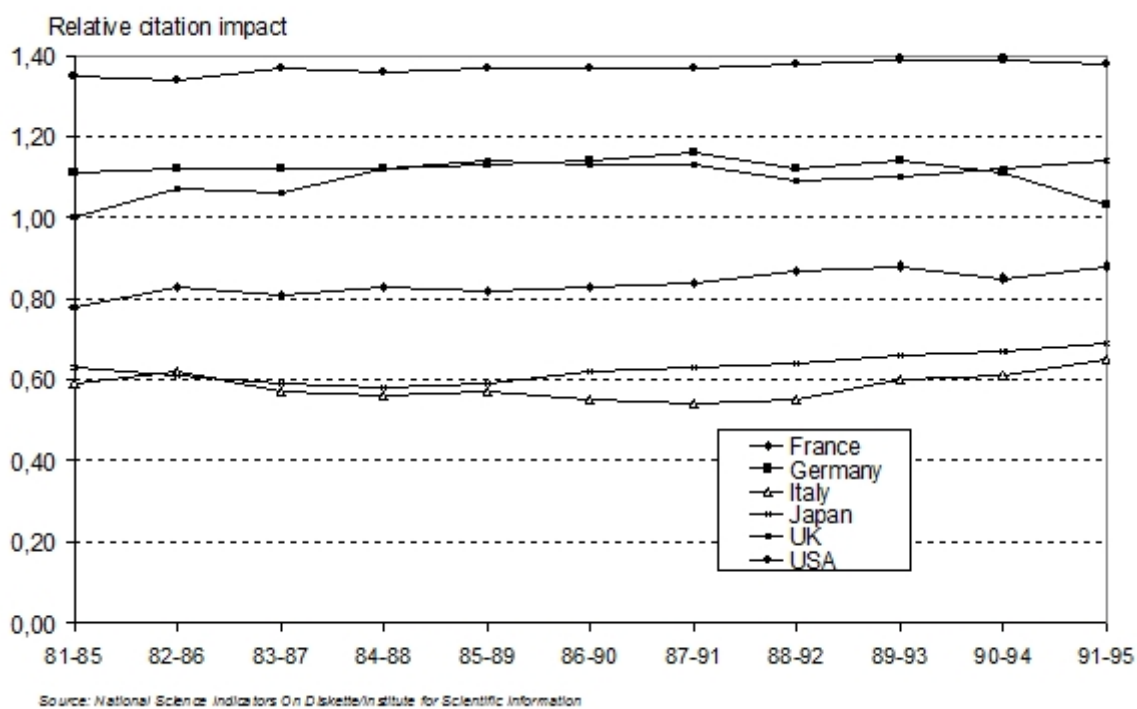


Fig. 18B Relative citation impact within *Molecular Biology & Genetics* for selected countries 1981-95. Accumulated figures for 5-year periods.

The National Science Indicators On Diskette - NSIOD - is a database from the Institute for Scientific Information (ISI) which contains publication and citation data from the whole world. The description below concerns the standard version⁹.

Time frame

The data cover the period 1981-1995. The database is updated annually.

Content

- Total number of articles by individual countries.
- Total number of cited articles.
- Total number of citations.
- Citation impact, i.e. the average number of citations per article.

Aggregate data for individual fields of science and world totals are also available.

Fields of science

All data can be broken down into 24 fields of science. Specifications exist for each field about the journals in which the articles are published.

Data specifications:

Fields within the individual country:

- A. Number of articles
- B. Number of citations
- C. Citation impact, i.e. the number of citations per article (B/A)
- D. Number of cited articles
- E. Percentage of articles which are cited (D% of A)
- F. Relative citation impact for fields of science, i.e. the citation impact of a field for a particular country divided by the citation impact of the field for all countries together (C/N)
- G. Relative citation impact for countries, i.e. the citation impact of a field for a particular country divided by the citation impact of the country for all fields together (C/V)
- H. Percentage of articles of the number of articles for all countries together (A% of L)
- I. Percentage of articles of the number of articles for all fields together (A% of T)

⁹ There is also a "Deluxe version" which contains data from 93 countries as well as 3 geographic regions (*Asia Pacific, European Union, and Latin America*). The division by fields of learning is much finer and contains 102 categories including the humanities.

- J. Relative citation rate for fields of science, i.e. the percentage of cited articles of a field for a particular country divided by the percentage of cited articles of the field for all countries together (E/P)
- K. Relative citation rate for countries, i.e. the percentage of cited articles of a field for a particular country divided by the percentage of cited articles of the country for all fields together (E/X)

Fields for all countries together

- L. Number of articles
- M. Number of citations
- N. Citation impact, i.e. the number of citations per article (M/L)
- O. Number of cited articles
- P. Percentage of articles which are cited (O% of L)
- Q. Relative citation impact, i.e. the citation impact of a field divided by the world's citation impact for all fields together (N/AC)
- R. Percentage of articles of all articles in the world (L% of AB)
- S. Relative citation rate, i.e. the percentage of cited articles of a field divided by the percentage of cited articles for all fields and countries together (P/AD)

Countries for all fields together

- T. Number of articles
- U. Number of citations
- V. Citation impact, i.e. the number of citations per article (U/T)
- W. Number of cited articles
- X. Percentage of articles which are cited (W% of T)
- Y. Relative citation impact, i.e. the citation impact of a country divided by the world's citation impact for all countries together (V/AC)
- Z. Percentage of articles of all articles in the world (T% of AB)
- AA. Relative citation rate, i.e. the percentage of cited articles of a country divided by the percentage of cited articles for all fields and countries together (X/AD)

Totals for all countries and for all fields together

- AB. Number of articles
- AC. Citation impact, i.e. number of citations per article
- AD. Percentage of cited articles

Time periods

1. 5 year overlapping periods, i.e. 1981-1985, 1982-1986, 1983-1987, etc.
2. 1 year periods cited to present, i.e. data for individual years, 1982, 1983 ...1995
3. Cumulative 15 year periods

4. Most recent 5 year period, i.e. 1991-1995

Fields and journals in NSIOD

Annex 2

Every journal is classified in relation to the categories in the list below, which correspond to the categories in *Current Contents*. *Current Contents* is a database of tables of contents of scientific journals, in which bibliographic information for individual articles is given. *Current Contents* is published weekly in seven different sections. Each section covers journals from related fields. The relation between the NSIOD codes (standard version) the *Current Contents* codes can be seen below.

A detailed survey of the journals which are included in the database in *chemical* fields is given in Annex 3.

A journal only appears once within one and the same *Current Contents Product Code*. However, a journal may appear under two or more product codes, e.g., if a journal is relevant for both areas it may appear under *Life Sciences* as well as under *Agriculture, Biology & Environmental Sciences*. In such a case the journal appears twice in the database and is thus counted twice. The sum of the articles for all fields is for Norway 12.8 per cent higher than the actual number of articles. For the world as a whole this figure is 10.3 per cent. This percentage expresses overlap between fields.

The journal overlap between the three fields *Chemistry, Biology & Biochemistry*, and *Molecular Biology & Genetics* is however modest. Of the 1,025 listed journals only 12 are listed under two of these fields.

Many articles are authored by persons from more than one country. This is a further source of double counting, as the article will be included for each individual country.

Classifications of fields of science

National Science Indicators (NSIOD) Current Contents (CC)

Abbr.	Description	Abbr.	Current Contents	Product Code	Description
AGD	Agricultural Sciences	A/A	A=Agriculture, Biology & Environmental Sciences		Agriculture/Agronomy
AGD	Agricultural Sciences	CMA	A=Agriculture, Biology & Environmental Sciences		Agricultural Chemistry
AGD	Agricultural Sciences	F	A=Agriculture, Biology & Environmental Sciences		Food/Nutrition
ASD	Astrophysics	SP	S=Physical, Chemical and Earth Sciences		Space Science
BID	Biology & Biochemistry	BIL	P=Life Sciences		Biochemistry & Biophysics
BID	Biology & Biochemistry	BIO	A=Agriculture, Biology & Environmental Sciences		Biology
BID	Biology & Biochemistry	BTC	A=Agriculture, Biology & Environmental Sciences		Biotechnology & Applied Microbiology
BID	Biology & Biochemistry	END	P=Life Sciences		Endocrinology & Metabolism
BID	Biology & Biochemistry	EXP	P=Life Sciences		Experimental Biology & Medicine
BID	Biology & Biochemistry	PSL	P=Life Sciences		Physiology
CHD	Chemistry	CME	T=Engineering, Technology & Applied Sciences		Chemical engineering
CHD	Chemistry	CML	P=Life Sciences		Chemistry, Life Sciences
CHD	Chemistry	CMP	S=Physical, Chemical and Earth Sciences		Chemistry, General
CHD	Chemistry	ORG	S=Physical, Chemical and Earth Sciences		Organic Chemistry/Polymer Science
CHD	Chemistry	PHC	S=Physical, Chemical and Earth Sciences		Physical Chemistry/Chemical Physics
CLD	Clinical Medicine	AIC	C=Clinical Medicine		Anesthesia & Intensive Care
CLD	Clinical Medicine	CAR	C=Clinical Medicine		Cardiovascular & Respiratory Systems
CLD	Clinical Medicine	INF	C=Clinical Medicine		Clinical Immunology & Infectious Disease
CLD	Clinical Medicine	CLN	P=Life Sciences		Clinical Medicine (CC Life Science Edition)
CLD	Clinical Medicine	PSY	C=Clinical Medicine		Clinical Psychology & Psychiatry
CLD	Clinical Medicine	DEN	C=Clinical Medicine		Dentistry/Oral Surgery & Medicine
CLD	Clinical Medicine	DER	C=Clinical Medicine		Dermatology
CLD	Clinical Medicine	NUT	C=Clinical Medicine		Endocrinology, Metabolism & Nutrition
CLD	Clinical Medicine	GAS	C=Clinical Medicine		Gastroenterology & Hepatology
CLD	Clinical Medicine	GNC	C=Clinical Medicine		General & Internal Medicine
CLD	Clinical Medicine	HEM	C=Clinical Medicine		Hematology
CLD	Clinical Medicine	MED	C=Clinical Medicine		Research/Medical Technology & Laboratory Medicine
CLD	Clinical Medicine	NEU	C=Clinical Medicine		Neurology
CLD	Clinical Medicine	ONC	C=Clinical Medicine		Oncology
CLD	Clinical Medicine	OPH	C=Clinical Medicine		Ophthalmology
CLD	Clinical Medicine	ORT	C=Clinical Medicine		Ortopedics & Sports Medicine
CLD	Clinical Medicine	OTO	C=Clinical Medicine		Otolaryngology

Classifications of fields of science

National Science Indicators (NSIOD) Current Contents (CC)

Abbr.	Description	Abbr.	Current Contents Product Code	Description
CLD	Clinical Medicine	PED	C=Clinical Medicine	Pediatrics
CLD	Clinical Medicine	PMC	C=Clinical Medicine	Pharmacology/Toxicology
CLD	Clinical Medicine	RAD	C=Clinical Medicine	Radiology, Nuclear Medicine & Imaging
CLD	Clinical Medicine	REP	C=Clinical Medicine	Reproductive Medicine
CLD	Clinical Medicine	RHU	C=Clinical Medicine	Rheumatology
CLD	Clinical Medicine	SUR	C=Clinical Medicine	Surgery
CLD	Clinical Medicine	URO	C=Clinical Medicine	Urology
CSD	Computer Sciences	CTA	T=Engineering, Technology & Applied Sciences	Computer Engineering, Technology & Applications
CSD	Computer Sciences	IST	T=Engineering, Technology & Applied Sciences	Informations Technology & Communications Systems
ECD	Economics & Business	ECO	B=Social & Behavioral Sciences	Economics
ECD	Economics & Business	MGT	B=Social & Behavioral Sciences	Management
EDD	Education	EDU	B=Social & Behavioral Sciences	Education
END	Engineering	AER	T=Engineering, Technology & Applied Sciences	Aerospace Engineering
END	Engineering	ARA	T=Engineering, Technology & Applied Sciences	AI, Robotics & Automatic Control
END	Engineering	CIV	T=Engineering, Technology & Applied Sciences	Civil Engineering
END	Engineering	GNE	T=Engineering, Technology & Applied Sciences	Engineering Management/General
END	Engineering	EMA	T=Engineering, Technology & Applied Sciences	Engineering Mathematics
END	Engineering	EEE	T=Engineering, Technology & Applied Sciences	Environmental Engineering/Energy
END	Engineering	EL	T=Engineering, Technology & Applied Sciences	Electrical & Electronics Engineering
END	Engineering	I/M	T=Engineering, Technology & Applied Sciences	Instrumentation/Measurement
END	Engineering	MEC	T=Engineering, Technology & Applied Sciences	Mechanical Engineering
END	Engineering	NCL	T=Engineering, Technology & Applied Sciences	Nuclear Engineering
EVD	Ecology/Environment	ENV	A=Agriculture, Biology & Environmental Sciences	Environment/Ecology
GED	Geosciences	EAR	S=Physical, Chemical and Earth Sciences	Earth Sciences
GED	Geosciences	GPM	T=Engineering, Technology & Applied Sciences	Geo/Petro/Mining Engineering
IMD	Immunology	IMM	P=Life Sciences	Immunology
LAD	Law	LAW	B=Social & Behavioral Sciences	Law
MBD	Molecular Biology & Genetics	CEL	P=Life Sciences	Cell Biology
MBD	Molecular Biology & Genetics	MBG	P=Life Sciences	Molecular Biology & Genetics
MCD	Microbiology	MCB	P=Life Sciences	Microbiology
MSD	Materials Science	MTR	T=Engineering, Technology & Applied Sciences	Materials Science & Engineering
MSD	Materials Science	MET	T=Engineering, Technology & Applied Sciences	Metallurgy

Classifications of fields of science

National Science Indicators (NSIOD) Current Contents (CC)

Abbr.	Description	Abbr.	Current Contents Product Code	Description
MTD	Mathematics	MTH	S=Physical, Chemical and Earth Sciences	Mathematics
OTH	Multidisciplinary	MUL		Multidisciplinary
NED	Neurosciences	BEH	P=Life Sciences	Neurosciences & Behavior
PHD	Physics	APP	S=Physical, Chemical and Earth Sciences	Applied Physics/Condensed Matter/Materials Sciences
PHD	Physics	O/A	T=Engineering, Technology & Applied Sciences	Optics & Acoustics
PHD	Physics	PHS	S=Physical, Chemical and Earth Sciences	Physics
PLD	Plant & Animal Sciences	AN	P=Life Sciences	Animal & Plant Sciences
PLD	Plant & Animal Sciences	AS	A=Agriculture, Biology & Environmental Sciences	Animal Sciences
PLD	Plant & Animal Sciences	AQU	A=Agriculture, Biology & Environmental Sciences	Aquatic Sciences
PLD	Plant & Animal Sciences	ENT	A=Agriculture, Biology & Environmental Sciences	Entomology/Pest Control
PLD	Plant & Animal Sciences	PL	A=Agriculture, Biology & Environmental Sciences	Plant Sciences
PLD	Plant & Animal Sciences	VET	A=Agriculture, Biology & Environmental Sciences	Veterinary Medicine/Animal Health
PMD	Pharmacology	PHM	P=Life Sciences	Pharmacology
PSD	Psychology/Psychiatry	PSO	B=Social & Behavioral Sciences	Psychology
PSD	Psychology/Psychiatry	PSI	B=Social & Behavioral Sciences	Psychiatry
SSD	Social Sciences, General	GEO	B=Social & Behavioral Sciences	Environmental Studies, Geography & Development
SSD	Social Sciences, General	LIB	B=Social & Behavioral Sciences	Library & Information Science
SSD	Social Sciences, General	POL	B=Social & Behavioral Sciences	Political Science & Public Administration
SSD	Social Sciences, General	PUB	B=Social & Behavioral Sciences	Public Health & Health Care Science
SSD	Social Sciences, General	REH	B=Social & Behavioral Sciences	Rehabilitation
SSD	Social Sciences, General	S/A	B=Social & Behavioral Sciences	Sociology & Anthropology
SSD	Social Sciences, General	S/I	B=Social & Behavioral Sciences	Social Work & Social Policy

Classifications of chemistry related journals in NSIOD**Annex 3**

The list below contains all the journals which are categorised under the three chemistry related fields of science in the NSIOD database (standard version). The list is alphabetical within each field. The database also includes articles in the chemistry related fields from journals with a wider coverage such as NATURE, SCIENCE and the PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA.

Chemistry

ACCOUNTS OF CHEMICAL RESEARCH	BUNSEN-GESELLSCHAFT-PHYSICAL
ACH-MODELS IN CHEMISTRY	CHEMISTRY CHEMICAL PHYSICS
ACTA CHEMICA SCANDINAVICA	BIOCONJUGATE CHEMISTRY
ACTA CHIMICA SINICA	BIOMEDICAL CHROMATOGRAPHY
ACTA CRYSTALLOGRAPHICA SECTION A	BIOORGANIC & MEDICINAL CHEMISTRY
ACTA CRYSTALLOGRAPHICA SECTION	LETTERS
B-STRUCTURAL	BIOORGANIC CHEMISTRY
SCIENCE	BIOPHYSICAL CHEMISTRY
ACTA CRYSTALLOGRAPHICA SECTION C-CRYSTAL	BIOSPECTROSCOPY
STRUCTURE COMMUNICATIONS	BOLETIN DE LA SOCIEDAD CHILENA DE
ACTA CRYSTALLOGRAPHICA SECTION	QUIMICA
D-BIOLOGICAL	BULLETIN DE LA SOCIETE CHIMIQUE DE
CRYSTALLOGRAPHY	FRANCE
ACTA POLYMERICA	BULLETIN DES SOCIETES CHIMIQUES BELGES
ACTA POLYTECHNICA	BULLETIN OF THE CHEMICAL SOCIETY OF JAPAN
SCANDINAVICA-CHEMICAL	BULLETIN OF THE KOREAN CHEMICAL SOCIETY
TECHNOLOGY SERIES	BULLETIN OF THE POLISH ACADEMY OF
ADHESIVES AGE	SCIENCES-CHEMISTRY
ADVANCED POWDER TECHNOLOGY	CALPHAD-COMPUTER COUPLING OF PHASE
ADVANCES IN COLLOID AND INTERFACE	DIAGRAMS AND THERMOCHEMISTRY
SCIENCE	CANADIAN JOURNAL OF CHEMICAL
ADVANCES IN POLYMER TECHNOLOGY	ENGINEERING
AFINIDAD	CANADIAN JOURNAL OF CHEMISTRY-REVUE
AICHE JOURNAL	CANADIENNE DE CHIMIE
ANALES DE LA ASOCIACION QUIMICA	CARBOHYDRATE POLYMERS
ARGENTINA	CARBOHYDRATE RESEARCH
ANALES DE QUIMICA	CARBON
ANALYST	CATALYSIS LETTERS
ANALYTICAL CHEMISTRY	CATALYSIS REVIEWS-SCIENCE AND
ANGEWANDTE CHEMIE-INTERNATIONAL	ENGINEERING
EDITION IN	CATALYSIS TODAY
ENGLISH	CHEMICAL ENGINEER-LONDON
ANGEWANDTE MAKROMOLEKULARE CHEMIE	CHEMICAL ENGINEERING
ANNALI DI CHIMICA	CHEMICAL ENGINEERING & TECHNOLOGY
ANNUAL REVIEW OF PHYSICAL CHEMISTRY	CHEMICAL ENGINEERING AND PROCESSING
APPLIED CATALYSIS A-GENERAL	CHEMICAL ENGINEERING COMMUNICATIONS
APPLIED CATALYSIS B-ENVIRONMENTAL	CHEMICAL ENGINEERING JOURNAL AND THE
APPLIED MAGNETIC RESONANCE	BIOCHEMICAL ENGINEERING JOURNAL
APPLIED ORGANOMETALLIC CHEMISTRY	CHEMICAL ENGINEERING PROGRESS
APPLIED RADIATION AND ISOTOPES	CHEMICAL ENGINEERING RESEARCH & DESIGN
APPLIED SURFACE SCIENCE	CHEMICAL ENGINEERING SCIENCE
ATOMIZATION AND SPRAYS	CHEMICAL JOURNAL OF CHINESE
AUSTRALIAN JOURNAL OF CHEMISTRY	UNIVERSITIES-CHINESE
BERICHTE DER	CHEMICAL PAPERS-CHEMICKE ZVESTI

CHEMICAL PHYSICS
 CHEMICAL PHYSICS LETTERS
 CHEMICAL PROCESSING
 CHEMICAL REVIEWS
 CHEMICAL SOCIETY REVIEWS
 CHEMICAL WEEK
 CHEMICKE LISTY
 CHEMIE IN UNSERER ZEIT
 CHEMIE INGENIEUR TECHNIK
 CHEMISCHE BERICHTE
 CHEMISCHE TECHNIK
 CHEMISTRY & BIOLOGY
 CHEMISTRY & INDUSTRY
 CHEMISTRY IN BRITAIN
 CHEMISTRY LETTERS
 CHEMISTRY-A EUROPEAN JOURNAL
 CHEMTECH
 CHIMIA
 CHINESE JOURNAL OF CHEMICAL ENGINEERING
 CHROMATOGRAPHIA
 COLLECTION OF CZECHOSLOVAK CHEMICAL
 COMMUNICATIONS
 COLLOID AND POLYMER SCIENCE
 COLLOID JOURNAL
 COLLOIDS AND SURFACES A-PHYSICO-CHEMICAL
 AND
 ENGINEERING ASPECTS
 COLOR RESEARCH AND APPLICATION
 COMMENTS ON INORGANIC CHEMISTRY
 COMPUTERS & CHEMICAL ENGINEERING
 COMPUTERS & CHEMISTRY
 COORDINATION CHEMISTRY REVIEWS
 CROATICA CHIMICA ACTA
 CRYSTAL RESEARCH AND TECHNOLOGY
 DENKI KAGAKU
 DESALINATION
 DYES AND PIGMENTS
 ELECTROCHIMICA ACTA
 EUROPEAN JOURNAL OF MEDICINAL CHEMISTRY
 EUROPEAN JOURNAL OF SOLID STATE AND
 INORGANIC CHEMISTRY
 EUROPEAN POLYMER JOURNAL
 FARADAY DISCUSSIONS
 FILTRATION & SEPARATION
 FLUID PHASE EQUILIBRIA
 FUEL
 FUEL PROCESSING TECHNOLOGY
 FULLERENE SCIENCE AND TECHNOLOGY
 GAS SEPARATION & PURIFICATION
 GAZZETTA CHIMICA ITALIANA
 HEAT TRANSFER ENGINEERING
 HELVETICA CHIMICA ACTA
 HETEROATOM CHEMISTRY
 HETEROCYCLES
 HETEROGENEOUS CHEMISTRY REVIEWS
 HIGH ENERGY CHEMISTRY
 HRC-JOURNAL OF HIGH RESOLUTION
 CHROMATOGRAPHY
 HUNGARIAN JOURNAL OF INDUSTRIAL
 CHEMISTRY
 HYDROCARBON PROCESSING
 INDIAN JOURNAL OF CHEMICAL TECHNOLOGY
 INDIAN JOURNAL OF CHEMISTRY SECTION
 A-INORGANIC BIO-INORGANIC PHYSICAL
 THEORETICAL & ANALYTICAL CHEMISTRY
 INDIAN JOURNAL OF CHEMISTRY SECTION
 B-ORGANIC
 CHEMISTRY INCLUDING MEDICINAL
 CHEMISTRY
 INDIAN JOURNAL OF HETEROCYCLIC
 CHEMISTRY
 INDUSTRIAL & ENGINEERING CHEMISTRY
 RESEARCH
 INORGANIC CHEMISTRY
 INORGANICA CHIMICA ACTA
 INTERNATIONAL JOURNAL OF CHEMICAL
 KINETICS
 INTERNATIONAL JOURNAL OF PEPTIDE AND
 PROTEIN
 RESEARCH
 INTERNATIONAL JOURNAL OF QUANTUM
 CHEMISTRY
 INTERNATIONAL JOURNAL OF THERMOPHYSICS
 INTERNATIONAL REVIEWS IN PHYSICAL
 CHEMISTRY
 INZYNIERIA CHEMICZNA I PROCESOWA
 ISOTOPES IN ENVIRONMENTAL AND HEALTH
 STUDIES
 ISRAEL JOURNAL OF CHEMISTRY
 IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENII
 KHIMIYA I KHIMICHESKAYA TEKHOLOGIYA
 JOCCA-SURFACE COATINGS INTERNATIONAL
 JOURNAL DE CHIMIE PHYSIQUE ET DE
 PHYSICO-CHIMIE BIOLOGIQUE
 JOURNAL DE PHYSIQUE II
 JOURNAL FUR PRAKTISCHE
 CHEMIE-CHEMIKER-ZEITUNG
 JOURNAL OF AOAC INTERNATIONAL
 JOURNAL OF APPLIED CRYSTALLOGRAPHY
 JOURNAL OF APPLIED ELECTROCHEMISTRY
 JOURNAL OF APPLIED POLYMER SCIENCE
 JOURNAL OF AUTOMATIC CHEMISTRY
 JOURNAL OF CATALYSIS
 JOURNAL OF CHEMICAL AND ENGINEERING
 DATA
 JOURNAL OF CHEMICAL CRYSTALLOGRAPHY
 JOURNAL OF CHEMICAL EDUCATION
 JOURNAL OF CHEMICAL ENGINEERING OF
 JAPAN
 JOURNAL OF CHEMICAL INFORMATION AND
 COMPUTER SCIENCES
 JOURNAL OF CHEMICAL PHYSICS
 JOURNAL OF CHEMICAL RESEARCH-S
 JOURNAL OF CHEMICAL TECHNOLOGY AND
 BIOTECHNOLOGY
 JOURNAL OF CHEMICAL THERMODYNAMICS
 JOURNAL OF CHROMATOGRAPHIC SCIENCE
 JOURNAL OF CHROMATOGRAPHY A

JOURNAL OF CHROMATOGRAPHY B-BIOMEDICAL APPLICATIONS
 JOURNAL OF COLLOID AND INTERFACE SCIENCE
 JOURNAL OF COMPUTATIONAL CHEMISTRY
 JOURNAL OF COORDINATION CHEMISTRY
 JOURNAL OF CRYSTAL GROWTH
 JOURNAL OF DISPERSION SCIENCE AND TECHNOLOGY
 JOURNAL OF FLUORINE CHEMISTRY
 JOURNAL OF HETEROCYCLIC CHEMISTRY
 JOURNAL OF INCLUSION PHENOMENA AND MOLECULAR RECOGNITION IN CHEMISTRY
 JOURNAL OF INORGANIC AND ORGANOMETALLIC POLYMERS
 JOURNAL OF INORGANIC BIOCHEMISTRY
 JOURNAL OF LABELLED COMPOUNDS & RADIOPHARMACEUTICALS
 JOURNAL OF LIQUID CHROMATOGRAPHY
 JOURNAL OF LOSS PREVENTION IN THE PROCESS INDUSTRIES
 JOURNAL OF MACROMOLECULAR SCIENCE-PHYSICS
 JOURNAL OF MACROMOLECULAR SCIENCE-PURE AND APPLIED CHEMISTRY
 JOURNAL OF MACROMOLECULAR SCIENCE-REVIEWS
 IN MACROMOLECULAR CHEMISTRY AND PHYSICS
 JOURNAL OF MAGNETIC RESONANCE SERIES A
 JOURNAL OF MAGNETIC RESONANCE SERIES B
 JOURNAL OF MASS SPECTROMETRY
 JOURNAL OF MATHEMATICAL CHEMISTRY
 JOURNAL OF MEDICINAL CHEMISTRY
 JOURNAL OF MEMBRANE SCIENCE
 JOURNAL OF MOLECULAR CATALYSIS A-CHEMICAL
 JOURNAL OF MOLECULAR CATALYSIS B-ENZYMATIC
 JOURNAL OF MOLECULAR GRAPHICS
 JOURNAL OF MOLECULAR LIQUIDS
 JOURNAL OF MOLECULAR SPECTROSCOPY
 JOURNAL OF MOLECULAR STRUCTURE
 JOURNAL OF ORGANIC CHEMISTRY
 JOURNAL OF ORGANOMETALLIC CHEMISTRY
 JOURNAL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY
 A-CHEMISTRY
 JOURNAL OF PHYSICAL CHEMISTRY
 JOURNAL OF PHYSICAL ORGANIC CHEMISTRY
 JOURNAL OF POLYMER SCIENCE PART A-POLYMER CHEMISTRY
 JOURNAL OF POLYMER SCIENCE PART B-POLYMER PHYSICS
 JOURNAL OF POWER SOURCES
 JOURNAL OF PROCESS CONTROL
 JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY-ARTICLES
 JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY-LETTERS
 JOURNAL OF SOLID STATE CHEMISTRY
 JOURNAL OF SOLUTION CHEMISTRY
 JOURNAL OF STRUCTURAL CHEMISTRY
 JOURNAL OF SUPERCRITICAL FLUIDS
 JOURNAL OF SYNTHETIC ORGANIC CHEMISTRY JAPAN
 JOURNAL OF THE AMERICAN CHEMICAL SOCIETY
 JOURNAL OF THE CHEMICAL SOCIETY OF PAKISTAN
 JOURNAL OF THE CHEMICAL SOCIETY-CHEMICAL COMMUNICATIONS
 JOURNAL OF THE CHEMICAL SOCIETY-DALTON TRANSACTIONS
 JOURNAL OF THE CHEMICAL SOCIETY-FARADAY TRANSACTIONS
 JOURNAL OF THE CHEMICAL SOCIETY-PERKIN TRANSACTIONS 1
 JOURNAL OF THE CHEMICAL SOCIETY-PERKIN TRANSACTIONS 2
 JOURNAL OF THE CHINESE CHEMICAL SOCIETY
 JOURNAL OF THE CHINESE INSTITUTE OF CHEMICAL ENGINEERS
 JOURNAL OF THE ELECTROCHEMICAL SOCIETY
 JOURNAL OF THE INDIAN CHEMICAL SOCIETY
 JOURNAL OF THE SOCIETY OF DYERS AND COLOURISTS
 KAGAKU KOGAKU RONBUNSHU
 KHIMICHESKAYA FIZIKA
 KHIMIYA GETEROTSIKLICHESKIKH SOEDINENII
 KHIMIYA PRIRODNYKH SOEDINENII
 KINETICS AND CATALYSIS
 KOBUNSHI RONBUNSHU
 KOORDINATSIONNAYA KHIMIYA
 KOREAN JOURNAL OF CHEMICAL ENGINEERING
 KRISTALLOGRAFIYA
 LANGMUIR
 LASER CHEMISTRY
 LIEBIGS ANNALEN
 LIQUID CRYSTALS
 MACROMOLECULAR CHEMISTRY AND PHYSICS
 MACROMOLECULAR RAPID COMMUNICATIONS
 MACROMOLECULAR SYMPOSIA
 MACROMOLECULAR THEORY AND SIMULATIONS
 MACROMOLECULES
 MAGNETIC RESONANCE IN CHEMISTRY
 MAGYAR KEMIAI FOLYOIRAT
 MANUFACTURING CHEMIST
 MENDELEEV COMMUNICATIONS
 MICROCHEMICAL JOURNAL
 MIKROCHIMICA ACTA
 MOLECULAR CRYSTALS AND LIQUID CRYSTALS SCIENCE AND TECHNOLOGY SECTION
 A-MOLECULAR CRYSTALS AND LIQUID

CRYSTALS
MOLECULAR PHYSICS
MOLECULAR SIMULATION
MONATSHEFTE FUR CHEMIE
NATURAL PRODUCT REPORTS
NEW JOURNAL OF CHEMISTRY
NIPPON KAGAKU KAISHI
ORGANIC PREPARATIONS AND PROCEDURES
INTERNATIONAL
ORGANOMETALLICS
PARTICLE & PARTICLE SYSTEMS
CHARACTERIZATION
PARTICULATE SCIENCE AND TECHNOLOGY
PETROLEUM CHEMISTRY
PHOSPHORUS SULFUR AND SILICON AND THE
RELATED ELEMENTS
PHYSICS AND CHEMISTRY OF GLASSES
PHYSICS AND CHEMISTRY OF LIQUIDS
PLASMA CHEMISTRY AND PLASMA PROCESSING
POLISH JOURNAL OF CHEMISTRY
POLYHEDRON
POLYMER
POLYMER BULLETIN
POLYMER DEGRADATION AND STABILITY
POLYMER INTERNATIONAL
POLYMER JOURNAL
POLYMER REACTION ENGINEERING
PROCEEDINGS OF THE INDIAN ACADEMY OF
SCIENCES-CHEMICAL SCIENCES
PROCESS CONTROL AND QUALITY
PROCESS SAFETY AND ENVIRONMENTAL
PROTECTION
PROCESS SAFETY PROGRESS
PROGRESS IN NUCLEAR MAGNETIC RESONANCE
SPECTROSCOPY
PROGRESS IN POLYMER SCIENCE
PROGRESS IN REACTION KINETICS
PROPELLANTS EXPLOSIVES PYROTECHNICS
PRZEMYSŁ CHEMICZNY
PURE AND APPLIED CHEMISTRY
RADIOCHEMISTRY
RADIOCHIMICA ACTA
REACTION KINETICS AND CATALYSIS LETTERS
REACTIVE & FUNCTIONAL POLYMERS
RECUEIL DES TRAVAUX CHIMIQUES DES
PAYS-BAS-JOURNAL OF THE ROYAL
NETHERLANDS
CHEMICAL SOCIETY
RESEARCH ON CHEMICAL INTERMEDIATES
REVISTA DE CHIMIE
REVUE ROUMAINE DE CHIMIE
RUBBER CHEMISTRY AND TECHNOLOGY
RUSSIAN CHEMICAL BULLETIN
RUSSIAN JOURNAL OF APPLIED CHEMISTRY
RUSSIAN JOURNAL OF ELECTROCHEMISTRY
SEPARATION SCIENCE AND TECHNOLOGY
SEPARATIONS TECHNOLOGY
SOAP COSMETICS CHEMICAL SPECIALTIES
SOLID STATE NUCLEAR MAGNETIC RESONANCE
SOLVENT EXTRACTION AND ION EXCHANGE
SOUTH AFRICAN JOURNAL OF
CHEMISTRY-SUID-AFRIKAANSE TYDSKRIF VIR
CHEMIE
STRUCTURAL CHEMISTRY
SUPRAMOLECULAR CHEMISTRY
SURFACE AND INTERFACE ANALYSIS
SURFACE SCIENCE
SURFACE SCIENCE REPORTS
SYNLETT
SYNTHESIS AND REACTIVITY IN INORGANIC
AND
METAL-ORGANIC CHEMISTRY
SYNTHESIS-STUTTGART
SYNTHETIC COMMUNICATIONS
TENSIDE SURFACTANTS DETERGENTS
TETRAHEDRON
TETRAHEDRON LETTERS
TETRAHEDRON-ASYMMETRY
THEOCHEM-JOURNAL OF MOLECULAR
STRUCTURE
THEORETICA CHIMICA ACTA
THEORETICAL FOUNDATIONS OF CHEMICAL
ENGINEERING
THERMOCHIMICA ACTA
TOPICS IN CATALYSIS
TRANSITION METAL CHEMISTRY
TRANSPORT IN POROUS MEDIA
ULTRASONICS SONOCHEMISTRY
USPEKHI KHIMII
VESTNIK MOSKOVSKOGO UNIVERSITETA SERIYA
2
KHIMIYA
VYSOKOMOLEKULYARNYE SOEDINENIYA
SERIYA A &
SERIYA B
ZEITSCHRIFT FUR ANORGANISCHE UND
ALLGEMEINE
CHEMIE
ZEITSCHRIFT FUR KRISTALLOGRAPHIE
ZEITSCHRIFT FUR NATURFORSCHUNG SECTION
B-A
JOURNAL OF CHEMICAL SCIENCES
ZEITSCHRIFT FUR PHYSIKALISCHE
CHEMIE-INTERNATIONAL JOURNAL OF
RESEARCH
IN PHYSICAL CHEMISTRY & CHEMICAL PHYSICS
ZEOLITES
ZHURNAL FIZICHESKOI KHIMII
ZHURNAL NEORGANICHESKOI KHIMII
ZHURNAL OBSHCHEI KHIMII
ZHURNAL ORGANICHESKOI KHIMII

Biology & Biochemistry

ACTA ANATOMICA
 ACTA BIOCHIMICA POLONICA
 ACTA BIOLOGICA HUNGARICA
 ACTA BIOTECHNOLOGICA
 ACTA BIOTHEORETICA
 ACTA DIABETOLOGICA
 ACTA MEDICA OKAYAMA
 ACTA ONCOLOGICA
 ACTA PHYSIOLOGICA SCANDINAVICA
 ACTA PROTOZOOLOGICA
 ACTA TROPICA
 AGE
 AMERICAN BIOLOGY TEACHER
 AMERICAN BIOTECHNOLOGY LABORATORY
 AMERICAN JOURNAL OF CLINICAL NUTRITION
 AMERICAN JOURNAL OF HUMAN BIOLOGY
 AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY
 AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY
 AMERICAN JOURNAL OF PHYSIOLOGY-ENDOCRINOLOGY AND METABOLISM
 AMERICAN JOURNAL OF PHYSIOLOGY-GASTROINTESTINAL AND LIVER PHYSIOLOGY
 AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY
 AMERICAN JOURNAL OF PHYSIOLOGY-LUNG CELLULAR AND MOLECULAR PHYSIOLOGY
 AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY
 AMERICAN JOURNAL OF PHYSIOLOGY-RENAL FLUID AND ELECTROLYTE PHYSIOLOGY
 AMINO ACIDS
 AMYLOID-INTERNATIONAL JOURNAL OF EXPERIMENTAL AND CLINICAL INVESTIGATION
 ANAEROBE
 ANALYTICAL BIOCHEMISTRY
 ANALYTICAL LETTERS
 ANATOMICAL RECORD
 ANDROLOGIA
 ANNALES D ENDOCRINOLOGIE
 ANNALES DE BIOLOGIE CLINIQUE
 ANNALS OF ANATOMY-ANATOMISCHER ANZEIGER
 ANNALS OF APPLIED BIOLOGY
 ANNALS OF BIOMEDICAL ENGINEERING
 ANNALS OF CLINICAL BIOCHEMISTRY
 ANNALS OF HUMAN BIOLOGY
 ANNALS OF NUTRITION AND METABOLISM
 ANNALS OF OCCUPATIONAL HYGIENE
 ANNEE BIOLOGIQUE
 ANNUAL REVIEW OF BIOCHEMISTRY
 ANNUAL REVIEW OF BIOPHYSICS AND BIOMOLECULAR STRUCTURE
 ANNUAL REVIEW OF NUTRITION
 ANNUAL REVIEW OF PHYSIOLOGY
 ANTICANCER RESEARCH
 ANTIMICROBIAL AGENTS AND CHEMOTHERAPY
 ANTIVIRAL CHEMISTRY & CHEMOTHERAPY
 APPLIED AND ENVIRONMENTAL MICROBIOLOGY
 APPLIED BIOCHEMISTRY AND BIOTECHNOLOGY
 APPLIED MICROBIOLOGY AND BIOTECHNOLOGY
 ARCHIV FUR PROTISTENKUNDE
 ARCHIVES OF ANDROLOGY
 ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS
 ARCHIVES OF DERMATOLOGICAL RESEARCH
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TRANSDUCTION RESEARCH
JOURNAL OF STRUCTURAL BIOLOGY
JOURNAL OF SUBMICROSCOPIC CYTOLOGY AND
PATHOLOGY
MAMMALIAN GENOME
MATRIX BIOLOGY
MECHANISMS OF AGEING AND DEVELOPMENT
MECHANISMS OF DEVELOPMENT
MODERN PATHOLOGY
MOLECULAR & GENERAL GENETICS
MOLECULAR AND CELLULAR BIOCHEMISTRY
MOLECULAR AND CELLULAR BIOLOGY
MOLECULAR AND CELLULAR PROBES
MOLECULAR BIOLOGY
MOLECULAR BIOLOGY AND EVOLUTION
MOLECULAR BIOLOGY OF THE CELL
MOLECULAR BIOLOGY REPORTS
MOLECULAR ECOLOGY
MOLECULAR MEDICINE
MOLECULAR MEDICINE TODAY
MOLECULAR MEMBRANE BIOLOGY
MOLECULAR MICROBIOLOGY
MOLECULAR REPRODUCTION AND
DEVELOPMENT
MUTAGENESIS
MUTATION RESEARCH LETTERS
MUTATION RESEARCH-DNA REPAIR
MUTATION RESEARCH-DNAGING GENETIC
INSTABILITY AND AGING
MUTATION RESEARCH-ENVIRONMENTAL
MUTAGENESIS AND RELATED SUBJECTS
MUTATION RESEARCH-FUNDAMENTAL AND
MOLECULAR MECHANISMS OF MUTAGENESIS
MUTATION RESEARCH-GENETIC TOXICOLOGY
MUTATION RESEARCH-REVIEWS IN GENETIC
TOXICOLOGY
NATURE GENETICS
NATURE MEDICINE
ONCOGENE
PATHOBIOLOGY
PATHOLOGIE
PATHOLOGIE BIOLOGIE
PATHOLOGY
PATHOLOGY INTERNATIONAL
PATHOLOGY RESEARCH AND PRACTICE
PIGMENT CELL RESEARCH
PLASMID
PLATELETS
PROGRESS IN BIOPHYSICS & MOLECULAR
BIOLOGY
RECEPTOR
RECEPTORS & CHANNELS
ROUXS ARCHIVES OF DEVELOPMENTAL
BIOLOGY
SEMINARS IN CELL BIOLOGY
SOMATIC CELL AND MOLECULAR GENETICS
STRUCTURE
TERATOGENESIS CARCINOGENESIS AND
MUTAGENESIS
THEORETICAL POPULATION BIOLOGY
TISSUE & CELL
TRANSGENIC RESEARCH
TRENDS IN CELL BIOLOGY
TRENDS IN GENETICS
TUMOR BIOLOGY
ULTRASTRUCTURAL PATHOLOGY
VETERINARY PATHOLOGY
VIRCHOWS ARCHIV-AN INTERNATIONAL
JOURNAL OF
PATHOLOGY
VIRUS GENES
ZYGOTE

Del II: Aris Kaloudis
Publication Analysis of Norwegian Research within
*Chemistry**

1 Introduction

This paper presents the results of a study undertaken by NIFU for the Research Council of Norway to give a more detailed picture of publication patterns within Norwegian chemistry. Two questions are central: How many internationally peer-reviewed scientific articles are published by Norwegian researchers within specific subdisciplines in chemistry? What are the most important international journals for Norwegian researchers to publish in? The answers can give us some indication of the extent to which Norwegian or Nordic journals are important arenas for the visibility of Norwegian research.

This bibliometric study should be viewed as an extension of the analysis on publishing and citation patterns within Norwegian chemistry undertaken by Terje Bruen Olsen at NIFU. That analysis describes the *national* scientific publishing activity in chemistry over a 15-year period as such with comparisons of corresponding publishing activity in other countries.

The basis for both studies is the American database *Science Citation Index (SCI)* prepared by the *Institute for Scientific Information (ISI)* in Philadelphia, USA. In this study the data are handled with the help of data programmes for detailed bibliometric studies of *SCI* and the *Social Science Citation Index, SSCI*, developed by NIFU during the period 1994-1996.

The following information about publication is included in the *SCI* database for publications which are registered there: the article's title, the names of authors and co-authors, the title of the journal, the number and year of publication, the work address of the authors, the number of references to other publications, the language of the article, and the type of publication (i.e. whether it is a research article, a discussion article, a working paper, etc.) A printout of a typical Norwegian article in medicine in the *SCI CD-ROM* is listed below.

Authors: Blomhoff-HK Erikstein-BK Espevik-T Funderud-S
Lesslauer-W Prydz-K Smeland-EB

Title: Independent Regulation of 55-kDa and 75-Kda Tumor-Necrosis-Factor Receptors During Activation of Human Peripheral-BloodLymphocytes-B

Source: EUROPEAN JOURNAL OF IMMUNOLOGY
1991, Vol 21, Iss 4, pp 1033-1037

Language: English

Document type: Article

TGA No.: FJ284

Cited references: 25

Addresses:
UNIV TRONDHEIM, INST CANC RES, TRONDHEIM, NORWAY
F HOFFMANN LA ROCHE & CO LTD, CENT RES UNITS, CH 4002 BASEL, SWITZERLAND
NORWEGIAN CANC SOC, OSLO, **NORWAY**
INST CANC RES, DEPT PATHOL, IMMUNOL LAB, N 0310 OSLO 3, **NORWAY**
INST CANC RES, DEPT BIOCHEM, N 0310 OSLO 3, **NORWAY**

With this information in mind we checked the SCI database for the period 1990-1994 for all the articles which contain the word "NORWAY" in the address. WE then had a collection of articles which were defined as *Norwegian SCI 90-94 articles*.

Within this collection of Norwegian articles we looked at the titles as a criterion for classifying the articles into subdisciplines within chemistry. In order to do this we used the SCI journal classification system from 1994. All the Norwegian articles which are in the SCI from 1990 to 1994 published within chemistry have been classified in the following subdisciplines: *Biochemistry & Molecular Biology, Electrochemistry, General Chemistry, Clinical & Medical Chemistry, Analytical Chemistry, Applied Chemistry, Chemical Engineering, Organic Chemistry, Physical Chemistry, Inorganic & Nuclear Chemistry*.

2 Survey of Norwegian publishing activity within chemistry

The total number of SCI publications during the period 1990-1994 is 2,72.

Distribution by publication year is as follows: 1990: 378, 1991: 402, 1992: 446, 1993: 552, 1994: 472. **Figure 1** (Annex) shows the distribution of Norwegian publications by subdisciplines within chemistry.

Many of the SCI journals which publish Norwegian articles are classified under several subdisciplines. This is a natural consequence as many journals cover several research areas within chemistry. The overlap pattern in **Table 1** (Annex) is thus the result of two concurrent conditions: 1) ISI's overlapping journal classification system and 2) the production of Norwegian articles in journals which cover several research areas within chemistry.

3 Most important journals for Norwegian publishing in chemistry registered in SCI

Where Norwegian research results are published is an important issue in a publication analysis. Some journals have a more international profile and they are more "popular" than others. A journal's specific profile, its publishing philosophy and publishing strategies are decisive to a certain extent for the kind of audience it will reach and thus the probability that an article will be cited in other publications. Citation behaviour of researchers in some countries may discriminate against some journals in favour of others.

In this study we have registered 271 journals in SCI which have published at least one Norwegian article in chemistry in the period 1990-1994. A few key journals cover a very large percentage of Norwegian scientific articles in chemistry in this period: *28 journals in SCI (ten per cent of the total) publish 50 per cent of all the Norwegian publications.* The list below contains the 28 journals ranked by the number of Norwegian articles they publish. The list also contains the absolute and cumulative percentages of the number of articles which are published in these 28 journals.

The 2,272 Norwegian publications are distributed over 271 journals within 10 subdisciplines of chemistry as follows:

Biochemistry & Molecular Biology

No.	Journal	No. of art.	Cum. sum	%	Cum %
1	ACTA CHEMICA SCANDINAVICA	236	236	10.39	10.39
2	BIOCHIMICA ET BIOPHYSICA ACTA	63	299	2.77	13.16
3	JOURNAL OF BIOLOGICAL CHEMISTRY	58	357	2.55	15.72
4	BIOCHEMICAL JOURNAL	57	414	2.51	18.22
5	JOURNAL OF MOLECULAR STRUCTURE	55	469	2.42	20.65
6	JOURNAL OF CELLULAR BIOCHEMISTRY	51	520	2.24	22.89
7	ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY	44	564	1.94	24.83
8	EUROPEAN JOURNAL OF BIOCHEMISTRY	38	602	1.67	26.50
9	CLINICAL CHEMISTRY	34	636	1.50	28.00
10	JOURNAL OF NEUROCHEMISTRY	34	670	1.50	29.49
11	FASEB JOURNAL	31	701	1.36	30.86
12	FISH PHYSIOLOGY AND BIOCHEMISTRY	31	732	1.36	32.22
13	INTERNATIONAL JOURNAL OF BIOCHEMISTRY	30	762	1.32	33.54
14	ANALYST	29	791	1.28	34.82
15	BIOCHEMICAL PHARMACOLOGY	29	820	1.28	36.09
16	MUTATION RESEARCH	29	849	1.28	37.37
17	JOURNAL OF THE AMERICAN CHEMICAL SOCIETY	28	877	1.23	38.60
18	FEBS LETTERS	27	904	1.19	39.79
19	CARBOHYDRATE POLYMERS	26	930	1.14	40.94
20	JOURNAL OF PETROLEUM TECHNOLOGY	26	956	1.14	42.08
21	THEOCHEM-JOURNAL OF MOLECULAR STRUCTURE	26	982	1.14	43.22
22	BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS	25	1007	1.10	44.32
23	ELECTROCHIMICA ACTA	23	1030	1.01	45.34
24	JOURNAL OF CHROMATOGRAPHY-BIOMEDICAL APPLICATIONS	23	1053	1.01	46.35
25	JOURNAL OF COLLOID AND INTERFACE SCIENCE	22	1075	0.97	47.32
26	JOURNAL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY B-BIOLOGY	22	1097	0.97	48.29
27	COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY B-COMPARATIVE BIOCHEMIS	21	1118	0.92	49.21
28	COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY A-COMPARATIVE PHYSIOLOG	20	1138	0.88	50.09

ACTA CHEMICA SCANDINAVICA	236
BIOCHIMICA ET BIOPHYSICA ACTA	63
JOURNAL OF BIOLOGICAL CHEMISTRY	58
BIOCHEMICAL JOURNAL	57
JOURNAL OF CELLULAR BIOCHEMISTRY	51
EUROPEAN JOURNAL OF BIOCHEMISTRY	38
JOURNAL OF NEUROCHEMISTRY	34
FASEB JOURNAL	31
FISH PHYSIOLOGY AND BIOCHEMISTRY	31
INTERNATIONAL JOURNAL OF BIOCHEMISTRY	30
BIOCHEMICAL PHARMACOLOGY	29
MUTATION RESEARCH	29
FEBS LETTERS	27
BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS	25
JOURNAL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY B-BIOLOGY	22
COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY B-COMPARATIVE BIOCHEMIS	21
COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY A-COMPARATIVE PHYSIOLOG	20
PHOTOCHEMISTRY AND PHOTOBIOLOGY	19
JOURNAL OF STEROID BIOCHEMISTRY AND MOLECULAR BIOLOGY	18
EMBO JOURNAL	17
JOURNAL OF LIPID RESEARCH	17

LIPIDS	17
BIOCHEMICAL SOCIETY TRANSACTIONS	16
COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY C-COMPARATIVE PHARMACOL	15
CANADIAN JOURNAL OF MICROBIOLOGY	13
JOURNAL OF MOLECULAR BIOLOGY	11
COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY A-PHYSIOLOGY	10
THERAPEUTIC DRUG MONITORING	10
ANALYTICAL BIOCHEMISTRY	9
MOLECULAR AND CELLULAR BIOCHEMISTRY	9
BIOCHEMICAL SYSTEMATICS AND ECOLOGY	8
GENE	8
BIOCHEMISTRY INTERNATIONAL	7
BIOCHIMICA ET BIOPHYSICA ACTA-LIPIDS AND LIPID METABOLISM	7
CELL	7
CHEMICO-BIOLOGICAL INTERACTIONS	6
HUMAN MOLECULAR GENETICS	6
JOURNAL OF MUSCLE RESEARCH AND CELL MOTILITY	6
MOLECULAR AND CELLULAR BIOLOGY	6
MOLECULAR MICROBIOLOGY	6
PLANT MOLECULAR BIOLOGY	6
ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS	5
BIOCHEMISTRY AND MOLECULAR BIOLOGY INTERNATIONAL	5
BIOSCIENCE REPORTS	5
GLYCOCONJUGATE JOURNAL	5
MAMMALIAN GENOME	5
MEDIATORS OF INFLAMMATION	5
METHODS IN ENZYMOLOGY	5
NEUROCHEMICAL RESEARCH	5
NEUROCHEMISTRY INTERNATIONAL	5
ZEITSCHRIFT FUR NATURFORSCHUNG C-A JOURNAL OF BIOSCIENCES	5
BIOCHEMISTRY	4
BIOCHIMICA ET BIOPHYSICA ACTA-GENE STRUCTURE AND EXPRESSION	4
BIOLOGICAL TRACE ELEMENT RESEARCH	4
BIOPOLYMERS	4
CHEMISTRY AND PHYSICS OF LIPIDS	4
COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY B-BIOCHEMISTRY & MOLECU	4
BIOLOGICAL CHEMISTRY HOPPE-SEYLER	3
CYTOKINE	3
FREE RADICAL BIOLOGY AND MEDICINE	3
INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES	3
JOURNAL OF BIOMOLECULAR STRUCTURE & DYNAMICS	3
JOURNAL OF CHEMICAL ECOLOGY	3
JOURNAL OF MOLECULAR EVOLUTION	3
PROTEIN ENGINEERING	3
ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY	2
ADVANCES IN SECOND MESSENGER AND PHOSPHOPROTEIN RESEARCH	2
BIOCHEMICAL GENETICS	2
BIOCHIMICA ET BIOPHYSICA ACTA-GENERAL SUBJECTS	2
BIOGENIC AMINES	2
BIOPHYSICAL CHEMISTRY	2
BIOTECHNOLOGY AND APPLIED BIOCHEMISTRY	2
BIO THERAPY	2
BULLETIN DE LA SOCIETE CHIMIQUE DE FRANCE	2
DNA AND CELL BIOLOGY	2
EUROPEAN JOURNAL OF CLINICAL CHEMISTRY AND CLINICAL BIOCHEMISTR	2
GLYCOBIOLOGY	2

JOURNAL OF BIOCHEMICAL AND BIOPHYSICAL METHODS	2
MOLECULAR & GENERAL GENETICS	2
MOLECULAR AND CELLULAR PROBES	2
MOLECULAR PHARMACOLOGY	2
PROCESS BIOCHEMISTRY	2
PROTEINS-STRUCTURE FUNCTION AND GENETICS	2
BIOCHEMICAL MEDICINE AND METABOLIC BIOLOGY	1
BIOCHEMICAL SOCIETY SYMPOSIUM	1
BIOCHIMICA ET BIOPHYSICA ACTA-MOLECULAR CELL RESEARCH	1
BIOCHIMICA ET BIOPHYSICA ACTA-PROTEIN STRUCTURE AND MOLECULAR E	1
BIOCHIMIE	1
CANCER BIOCHEMISTRY BIOPHYSICS	1
CELL GROWTH & DIFFERENTIATION	1
COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY	1
COMPARATIVE BIOCHEMISTRY AND PHYSIOLOGY C-PHARMACOLOGY TOXICOLO	1
FREE RADICAL RESEARCH COMMUNICATIONS	1
GROWTH FACTORS	1
HEMOGLOBIN	1
INTERNATIONAL JOURNAL OF PEPTIDE AND PROTEIN RESEARCH	1
JOURNAL DE CHIMIE PHYSIQUE ET DE PHYSICO-CHIMIE BIOLOGIQUE	1
JOURNAL OF CHEMICAL NEUROANATOMY	1
JOURNAL OF INTERFERON RESEARCH	1
JOURNAL OF MOLECULAR NEUROSCIENCE	1
JOURNAL OF PROTEIN CHEMISTRY	1
JOURNAL OF STRUCTURAL BIOLOGY	1
LYMPHOKINE RESEARCH	1
MOLECULAR ECOLOGY	1
PLANT CELL	1
PREPARATIVE BIOCHEMISTRY	1
PROCESS BIOCHEMISTRY INTERNATIONAL	1
PROGRESS IN BIOPHYSICS & MOLECULAR BIOLOGY	1
SECOND MESSENGERS AND PHOSPHOPROTEINS	1
TRENDS IN BIOCHEMICAL SCIENCES	1
 <i>Electrochemistry</i>	
ELECTROCHIMICA ACTA	23
JOURNAL OF THE ELECTROCHEMICAL SOCIETY	12
JOURNAL OF ELECTROANALYTICAL CHEMISTRY	4
JOURNAL OF APPLIED ELECTROCHEMISTRY	3
JOURNAL OF POWER SOURCES	2
 <i>General Chemistry</i>	
ACTA CHEMICA SCANDINAVICA	236
ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY	44
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY	28
MAGNETIC RESONANCE IN CHEMISTRY	13
JOURNAL OF CHEMICAL INFORMATION AND COMPUTER SCIENCES	9
MONATSFESTFTE FUR CHEMIE	8
ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY	7
PURE AND APPLIED CHEMISTRY	7
STRUCTURAL CHEMISTRY	7
ACS SYMPOSIUM SERIES	6
JOURNAL OF THE CHEMICAL SOCIETY-CHEMICAL COMMUNICATIONS	6
REVUE ROUMAINE DE CHIMIE	6
JOURNAL OF CHEMICAL EDUCATION	5

JOURNAL OF PHARMACEUTICAL SCIENCES	5
CROATICA CHEMICA ACTA	4
TOPICS IN CURRENT CHEMISTRY	4
CHEMICAL RESEARCH IN TOXICOLOGY	3
COMPUTERS & CHEMISTRY	3
PHARMACY WORLD & SCIENCE	3
SOLVENT EXTRACTION AND ION EXCHANGE	3
ACTA CHIMICA HUNGARICA	2
AGENTS AND ACTIONS	2
ARZNEIMITTEL-FORSCHUNG/DRUG RESEARCH	2
BULLETIN DE LA SOCIETE CHIMIQUE DE FRANCE	2
CANADIAN JOURNAL OF CHEMISTRY-REVUE CANADIENNE DE CHIMIE	2
CHEMICAL PAPERS-CHEMICKE ZVESTI	2
CHIRALITY	2
JOURNAL OF AUTOMATIC CHEMISTRY	2
JOURNAL OF NATURAL PRODUCTS-LLOYDIA	2
NEW JOURNAL OF CHEMISTRY	2
PHARMAZIE	2
ACTA CHIMICA HUNGARICA-MODELS IN CHEMISTRY	1
ACTA PHARMACOLOGICA SINICA	1
ADVANCES IN CHEMISTRY SERIES	1
AUSTRALIAN JOURNAL OF CHEMISTRY	1
BULLETIN DES SOCIETES CHIMIQUES BELGES	1
BULLETIN OF THE CHEMICAL SOCIETY OF JAPAN	1
JOURNAL OF CHEMICAL AND ENGINEERING DATA	1
JOURNAL OF CHEMICAL TECHNOLOGY AND BIOTECHNOLOGY	1
LIEBIGS ANNALEN DER CHEMIE	1
MARINE CHEMISTRY	1
PHARMACEUTICAL RESEARCH	1
POLISH JOURNAL OF CHEMISTRY	1
 <i>Clinical & Medical Chemistry</i>	
CLINICAL CHEMISTRY	34
CLINICA CHIMICA ACTA	8
EUROPEAN JOURNAL OF MEDICINAL CHEMISTRY	4
EUROPEAN JOURNAL OF CLINICAL CHEMISTRY AND CLINICAL BIOCHEMISTR	2
ADVANCES IN CLINICAL CHEMISTRY	1
JOURNAL OF MEDICINAL CHEMISTRY	1
 <i>Analytical Chemistry</i>	
ANALYST	29
JOURNAL OF CHROMATOGRAPHY-BIOMEDICAL APPLICATIONS	23
CHEMOMETRICS AND INTELLIGENT LABORATORY SYSTEMS	19
JOURNAL OF CHROMATOGRAPHY	16
ANALYTICA CHIMICA ACTA	15
HRC-JOURNAL OF HIGH RESOLUTION CHROMATOGRAPHY	13
JOURNAL OF LIQUID CHROMATOGRAPHY	12
JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY-ARTICLES	12
ANALYTICAL CHEMISTRY	11
VIBRATIONAL SPECTROSCOPY	11
FRESENIUS JOURNAL OF ANALYTICAL CHEMISTRY	10
CHROMATOGRAPHIA	6
JOURNAL OF CHROMATOGRAPHY A	6
THERMOCHIMICA ACTA	6
JOURNAL OF ELECTROANALYTICAL CHEMISTRY	4

INTERNATIONAL JOURNAL OF ENVIRONMENTAL ANALYTICAL CHEMISTRY	3
JOURNAL OF ANALYTICAL AND APPLIED PYROLYSIS	3
JOURNAL OF CHROMATOGRAPHY B-BIOMEDICAL APPLICATIONS	3
JOURNAL OF LABELLED COMPOUNDS & RADIOPHARMACEUTICALS	3
TRAC-TRENDS IN ANALYTICAL CHEMISTRY	3
TALANTA	2
ANALYSIS	1
ANALYTICAL LETTERS	1
ELECTROANALYSIS	1
JOURNAL OF AOAC INTERNATIONAL	1
JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY-LETTERS	1
MIKROCHIMICA ACTA	1
 <i>Applied Chemistry</i>	
FOOD CHEMISTRY	11
JOURNAL OF THE AMERICAN OIL CHEMISTS SOCIETY	5
CHEMISTRY & INDUSTRY	2
FETT WISSENSCHAFT TECHNOLOGIE-FAT SCIENCE TECHNOLOGY	1
FOOD HYDROCOLLOIDS	1
FUEL PROCESSING TECHNOLOGY	1
JOCCA-SURFACE COATINGS INTERNATIONAL	1
 <i>Chemical Engineering</i>	
JOURNAL OF PETROLEUM TECHNOLOGY	26
COMPUTERS & CHEMICAL ENGINEERING	17
INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH	11
CHEMICAL ENGINEERING SCIENCE	9
ENERGY & FUELS	9
FLUID PHASE EQUILIBRIA	8
CHEMICAL ENGINEERING RESEARCH & DESIGN	6
FUEL	6
AICHE JOURNAL	5
AICHE JOURNAL-AMERICAN INSTITUTE OF CHEMICAL ENGINEERS	4
JOURNAL OF MEMBRANE SCIENCE	4
CANADIAN JOURNAL OF CHEMICAL ENGINEERING	3
CHEMICAL ENGINEERING COMMUNICATIONS	3
POWDER TECHNOLOGY	3
CHEMIE INGENIEUR TECHNIK	2
ENERGY SOURCES	2
ENERGY	1
ERDOL & KOHLE ERDGAS PETROCHEMIE	1
FUEL PROCESSING TECHNOLOGY	1
HYDROCARBON PROCESSING	1
INTERNATIONAL JOURNAL OF MINERAL PROCESSING	1
JOURNAL OF CHEMICAL AND ENGINEERING DATA	1
JOURNAL OF CHEMICAL TECHNOLOGY AND BIOTECHNOLOGY	1
POLYMER ENGINEERING AND SCIENCE	1
 <i>Organic Chemistry</i>	
CARBOHYDRATE POLYMERS	26
CARBOHYDRATE RESEARCH	17
ORGANOMETALLICS	11
TETRAHEDRON	11
JOURNAL OF ORGANOMETALLIC CHEMISTRY	8
TETRAHEDRON-ASYMMETRY	8

SYNTHETIC COMMUNICATIONS	5
TETRAHEDRON LETTERS	5
HETEROCYCLES	4
ORGANIC MASS SPECTROMETRY	4
JOURNAL OF ORGANIC CHEMISTRY	3
JOURNAL OF PHYSICAL ORGANIC CHEMISTRY	3
JOURNAL OF THE CHEMICAL SOCIETY-PERKIN TRANSACTIONS 2	3
ZEITSCHRIFT FUR NATURFORSCHUNG SECTION B-A JOURNAL OF CHEMICAL	3
BULLETIN DE LA SOCIETE CHIMIQUE DE FRANCE	2
JOURNAL OF FLUORINE CHEMISTRY	2
JOURNAL OF THE CHEMICAL SOCIETY-PERKIN TRANSACTIONS II	2
JOURNAL OF HETEROCYCLIC CHEMISTRY	1

Physical Chemistry

JOURNAL OF MOLECULAR STRUCTURE	55
THEOCHEM-JOURNAL OF MOLECULAR STRUCTURE	26
JOURNAL OF COLLOID AND INTERFACE SCIENCE	22
SOLID STATE IONICS	13
CATALYSIS LETTERS	12
JOURNAL OF CHEMICAL THERMODYNAMICS	11
JOURNAL OF DISPERSION SCIENCE AND TECHNOLOGY	11
VIBRATIONAL SPECTROSCOPY	11
COLLOIDS AND SURFACES A-PHYSICO-CHEMICAL AND ENGINEERING ASPECTS	10
FLUID PHASE EQUILIBRIA	8
TETRAHEDRON-ASYMMETRY	8
APPLIED CATALYSIS	7
THEORETICA CHIMICA ACTA	7
CARBON	6
COLLOIDS AND SURFACES	6
INTERNATIONAL JOURNAL OF QUANTUM CHEMISTRY	6
ZEOLITES	6
JOURNAL OF ALLOYS AND COMPOUNDS	5
JOURNAL OF THE CHEMICAL SOCIETY-FARADAY TRANSACTIONS	5
ZEITSCHRIFT FUR PHYSIKALISCHE CHEMIE-INTERNATIONAL JOURNAL OF R	5
JOURNAL OF SOLUTION CHEMISTRY	4
SURFACE SCIENCE	4
APPLIED CATALYSIS A-GENERAL	3
APPLIED SURFACE SCIENCE	3
INTERNATIONAL JOURNAL OF THERMOPHYSICS	3
JOURNAL OF CATALYSIS	3
JOURNAL OF PHYSICAL ORGANIC CHEMISTRY	3
JOURNAL OF THE CHEMICAL SOCIETY-PERKIN TRANSACTIONS 2	3
STUDIES IN SURFACE SCIENCE AND CATALYSIS	3
ZEITSCHRIFT FUR NATURFORSCHUNG SECTION B-A JOURNAL OF CHEMICAL	3
BERICHTE DER BUNSEN GESELLSCHAFT FUR PHYSIKALISCHE CHEMIE-AN IN	2
BIOPHYSICAL CHEMISTRY	2
JOURNAL OF MATERIALS CHEMISTRY	2
JOURNAL OF THE CHEMICAL SOCIETY-PERKIN TRANSACTIONS II	2
LANGMUIR	2
SURFACE AND INTERFACE ANALYSIS	2
ADVANCES IN COLLOID AND INTERFACE SCIENCE	1
BERICHTE DER BUNSEN GESELLSCHAFT FUR PHYSIKALISCHE CHEMIE	1
FOOD HYDROCOLLOIDS	1
JOURNAL DE CHIMIE PHYSIQUE ET DE PHYSICO-CHEMIE BIOLOGIQUE	1
JOURNAL OF MOLECULAR CATALYSIS	1
ZEITSCHRIFT FUR PHYSIKALISCHE CHEMIE-LEIPZIG	1

Inorganic & Nuclear Chemistry

INORGANIC CHEMISTRY	13
JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY-ARTICLES	12
ORGANOMETALLICS	11
JOURNAL OF SOLID STATE CHEMISTRY	10
JOURNAL OF ORGANOMETALLIC CHEMISTRY	8
PHOSPHORUS SULFUR AND SILICON AND THE RELATED ELEMENTS	8
TETRAHEDRON-ASYMMETRY	8
JOURNAL OF THE CHEMICAL SOCIETY-DALTON TRANSACTIONS	7
POLYHEDRON	3
ZEITSCHRIFT FUR NATURFORSCHUNG SECTION B-A JOURNAL OF CHEMICAL	3
JOURNAL OF FLUORINE CHEMISTRY	2
RADIOCHIMICA ACTA	2
EUROPEAN JOURNAL OF SOLID STATE AND INORGANIC CHEMISTRY	1
JOURNAL OF RADIOANALYTICAL AND NUCLEAR CHEMISTRY-LETTERS	1
TOTALT:	271

Co-authorship with foreign authors

The US, Sweden, Great Britain and Germany are the countries with which Norwegian researchers in chemistry co-operate the most when producing international publications. **Figure 2** (Annex) shows in more detail the most important countries for Norwegian research collaboration and the number of co-authored publications.
