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Anatomy of the ICDS series: A bibliometric analysis

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Abstract

In this article, the proceedings of the International Conferences on Defects in Semiconductors (ICDS) have been analyzed by bibliometric methods. The papers of these conferences have been published as articles in regular journals or special proceedings journals and in books with diverse publishers. The conference name/title changed several times. Many of the proceedings did not appear in the so-called "source journals" covered by the Thomson/ISI citation databases, in particular by the Science Citation Index (SCI). But the number of citations within these source journals can be determined using the Cited Reference Search mode under the Web of Science (WoS) and the SCI offered by the host STN International. The search functions of both systems were needed to select the papers published as different document types and to cover the full time span of the series. The most cited ICDS papers were identified, and the overall numbers of citations as well as the time-dependent impact of these papers, of single conferences, and of the complete series, was established. The complete of citing papers was analyzed with respect to the countries of the citing authors, the citing journals, and the ISI subject categories.

Keywords: Bibliometry; Citations; Conference impact

1. Introduction

The International Conference on Defects in Semiconductors (ICDS) originated in 1959 as a spin-off of the International Conference on the Physics of Semiconductors (ICPS) which had started in Reading (UK) in 1950 and has since been held biannually (exception: 1952). During the 4th ICPS, in Rochester (NY), it was realized that the field of radiation effects had become very important. Following several discussions among the leading workers and administrators of the Atomic Energy Commission of the US, it was decided to hold a conference on Radiation Effects in Semiconductors in Gatlinburg (TN) in 1959. This became what is now called, after a few changes in name, ICDS-1.

The 23 past ICDS events were also held nearly biannually, six times in the US, five in Japan, three in France, two in Germany, and one each in Austria, Denmark, Hungary, The Netherlands, Portugal, Yugoslavia, and the UK. For the titles, years and locations of the conferences, which bear the present ICDS name since 1992, see references. Proceedings of conferences are usually scattered throughout various books and journals belonging to different publishers which may even no longer exist now. The ICDS series is no exception. In the process of preparing this article we have been able to trace and access all up to that of the ICDS-1. We have listed the appropriate access data in Refs. [1–24].

It is often heard that it is not worth publishing in conference proceedings because nobody cites them, let alone reads them. We shall try to prove quantitatively that this statement is not correct. The articles in the ICDS proceedings have been cited as much, if not more, than those in standard physics journals, including those devoted to semiconductors. The main problem is, of course, the scatter of these proceedings and the ICDSs are not an exception, at least till the ICDS-14 (ICDS-1 also appeared in a standard publication, the J. Appl. Phys. [1], a procedure, which was immediately discontinued). Even the proceedings that appeared as special volumes have been cited as much as 150 times per year.

The ICDS-1 opened with a keynote talk (Radiation Effects in Materials) by Harvey Brooks, a brilliant scientist and administrator who was then dean of Engineering and

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Applied Physics at Harvard. He later became scientific adviser to several US presidents. Brooks [25] had worked at The Knolls Atomic Power Laboratory before moving to Harvard in 1950. At Harvard, he had taken up semiconductor physics so he was a natural person to open the ICDS-1. Brooks passed away in May 2004. His opening talk has been cited 17 times, not bad for a general introduction to a new conference series.

2. The ICDS output

It is not possible to retrieve the number of oral and poster presentations to the ICDS. However, it is reasonable to assume that most of them found their way to the conference proceedings. We discuss them next. Fig. 1 displays the number of ICDS proceedings which appeared from ICDS-1 in 1959 to ICDS-23 in 2005. The number of articles published in journals was searched using the Science Citation Index (SCI) database whereas the book articles were counted on the basis of the original conference books.

Fig. 1 brings up the question of the time evolution of the ICDS related research topics. A search under Web of Science (WoS) for "(radiation damage OR radiation effects OR defects) SAME semiconductors" appearing in the titles and abstracts reveals some increase since 1990. Unfortunately, abstracts are not included in the WoS records before 1990. Restricting the search to title words results in a considerably lower number of articles per year. However, search terms appearing as title words probably retrieve the more relevant articles. The field has been growing till around 1990, showing then some saturation. This saturation may be due to the launching of new, more specialized conferences and symposia.

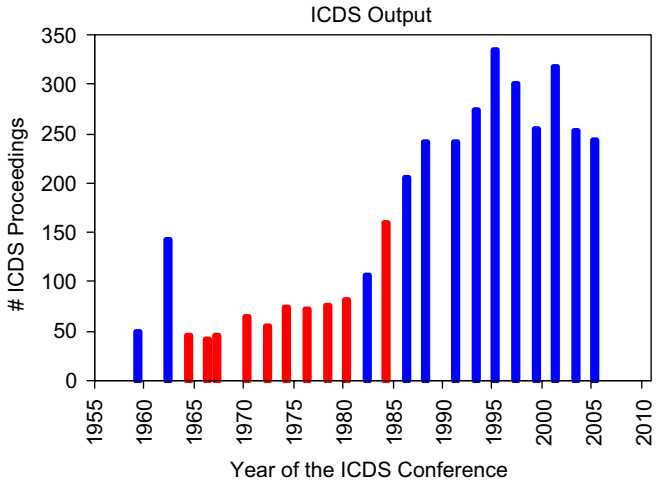

Fig. 1. Time-dependent number of publications in the ICDS proceedings appeared as articles in ISI source journals (blue, dark) and conference proceedings books (red, light). The bars are colored on the web. The peak of 143 for the ICDS-2 is due to the fact that the proceedings include not only defects in semiconductors but also in other solid-state materials like alkali halides and metals. There were only 23 papers referring to semiconductors. We thank G.D. Watkins for pointing this out to us.

3. The ICDS impact

The number of citations is often taken as a measure of the attention an article, a researcher, an institute or even a country has attracted. Although citation numbers are no ultimate scale of the final importance and quality of articles, they reflect strengths and shortcomings and, hence, are frequently used for research evaluation. Being cited means that a given publication (mostly a journal article, but sometimes also a publication in another document type such as a book) appears as footnote or reference in the publication of another author for additional reading. The number of citations is thus a rough measure of the importance or usefulness of the publication within the scientific community.

Methodology: The data presented here are based on the SCI under the WoS, the search platform provided by Thomson Scientific (the former Institute for Scientific Information, ISI). In addition, the database SCISEARCH (SCI under STN) has been consulted. The SCI under the WoS, goes back to 1900, the SCI under STN International only goes back to 1974.

The WoS offers two search modes: General Search and Cited Reference Search. The General Search mode shows publications in SCI "source journals" (no books, no popular publications, no conference proceedings unless they appear in source journals). The ~6000 SCI source journals selected by the staff of Thomson/ISI as contributing to the progress of science represent only about 10% of the total scientific literature (Bradford's law [26]). The WoS includes formal citations which appeared after 1900 (limited to the source journals), but including even citations of articles published before 1900.

The Cited Reference Search enables access to all references appeared in SCI source journals, whether they refer to articles in source journals (cited either correctly or containing errors), to books or any other published material (theses, internal reports, news items, or even private communications). With this search mode, in particular, the number of citations related to works not published in the ISI source journals (or their supplements) are determined, e.g., textbooks or conference proceedings.

Both search modes can be extended to larger ensembles of publications like those published as contributions to a conference series such as the ICDS. In this study, the most highly cited ICDS papers were identified, and the overall numbers of citations as well as the time-dependent impact (numbe of citations or citing papers per year) was established.

4. Proceedings under WoS

In order to determine the full impact for the time from the first ICDS-1 event in the year 1959 till present, the ISI data available both under the WoS and STN International were combined. The WoS Cited Reference Search mode and the coverage of the full time of the conference series

were required for the impact analysis of the book proceedings. The STN search options (and additional functions for carrying out statistical investigations) are essential to perform the citation analysis of the proceedings published in ISI source journals. The search system allows combining a specific journal with a specific volume, starting page and publication year of an article by which a reference is unambiguously coded. Under WoS General Search, no restriction to the volume and/or starting page of an article is possible.

Fig. 2 displays time-dependent citing papers (rather than citations) of ICDS proceedings published in books and journals. Note that one citing paper may comprise more than one citation (e.g. one citing paper refers to more than one ICDS proceedings). The total impact since 1974 (ICDS-8 to ICDS-23) was determined by adding the citations of the books (searched under WoS using the Cited Reference mode) and of the journals (searched under STN using the analogous Reference Work search fields).

The time period before 1974 is accessible only via the WoS. The citing papers of the ICDS-1 and ICDS-2 journal proceedings [1–2] (published 1959 and 1962) were searched by marking (and finally searching) all references related to the relevant entries under the WoS Cited Reference Search mode. The citing papers of the ICDS-3 up to the ICDS-6 book proceedings [3–6] (1964 till 1973) were searched by processing all relevant conference names (including acronyms), again under the WoS Cited Reference Search mode. The proceedings of the ICDS-7 up to the ICDS-11 were published by the Institute of Physics as part of the IOP conference series [7–11]. Because of the distinct name and the specific volumes and publication years, the citing papers of these proceedings could be searched under STN. Although the ICDS-7 proceedings were published 1973, it can be expected that most of the citing papers are covered by the SCI under STN but starting not before 1974.

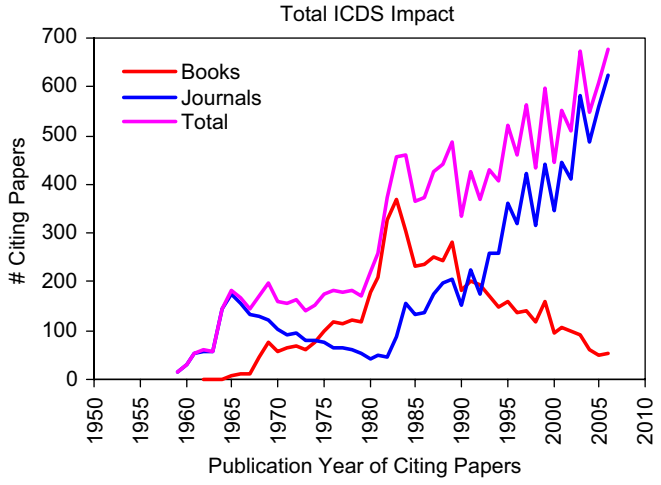

Fig. 2. Time-dependent number of citing papers since 1959, referring to at least one publication out of the ICDS conference series. The curves are colored on the web.

The ICDS proceedings appeared in the Materials Science Forum in the years 1986 till 1997 (ICDS-14 to ICDS-19) [14–19] are completely covered by the WoS. Since mid-1995 ISI has unified all versions of the various related source titles under this name, displaying the complete names (e.g. ICDS-19—Proceedings of the 19th international Conference on Defects in Semiconductors, Part 1–3) in the full format only. Before mid-1995 the Materials Science Forum proceedings are not searchable consistently in the WoS General Search mode. However, the conference names are still searchable under the WoS Cited Reference Search mode. Only the articles published in Physica B (1982 and 1999 till 2006) are searchable in both WoS search modes as regular journal articles.

The time-evolution of the total ICDS impact displayed in Fig. 2 reflects the evolution in the number of papers per conference till 1995 shown in Fig. 1. It is interesting to note that the latter number saturates and even slightly decreases. After 1991, however, the total number of citing papers keeps increasing, as we keep adding articles whose citation rate decreases only by a factor of two in 10 years. This decrease can be more directly seen in the books curve of Fig. 2 from the year in which the proceedings are "upgraded" from books to source journals (1982, and again 1986). It is responsible for the maximum in the book impact curve seen for the year 1983. The dip in the total impact curve between 1975 and 1980 is probably due to the anomalously large number of articles in the ICDS-2 proceedings [2] whose citations peter out before the impact of the book proceedings has become significant.

The search procedure discussed above illustrates a general problem concerning citations of non-journal articles: There is no standardization with respect to the names/titles of the conference or the related proceedings like in the case of the journal titles or their abbreviations. The WoS Cited Reference Search mode reveals all citation versions of specific proceedings appeared, as cited by the citing authors in the reference part of their original papers. The total number of citations has to be determined by selecting and adding up all relevant WoS reference entries. There is no single-source journal record with the number of total citations included, as in the case of journal articles.

Please note: The varying ICDS conference titles and the different document types of the ICDS proceedings (books, proceedings journals, regular article journals) in combination with the different coverage of these document types by the WoS bring about that the data presented here are hardly accessible for casual users of the Thomson/ISI databases.

The graph displaying the time-dependent evolution of a single article is sometimes called its citation history. Each article develops its own life span as it is being cited. With time, the citations per year (citation rate) normally evolve following a similar pattern: the citations generally do not increase substantially until 1 year after publication. They reach a summit after about 3 years, the peak position depending somewhat on the research discipline.

Subsequently, as the articles are displaced by newer ones, their impact decreases, accumulating citations at a lower level. Finally, most of them are barely cited or forgotten. Fig. 3 shows the citation history of the three most highly cited papers of ICDS series (see Table 1 below). They confirm the pattern just mentioned.

This pattern can also be found in the case of the ensemble of the proceedings of a specific ICDS conference. Fig. 4 shows the citation history of four earlier conferences (ICDS-1, ICDS-2, ICDS-6, and ICDS-12). The ICDS-12 curve was established under STN (the first Physica B publication) whereas the other curves were obtained under the WoS Cited Reference Search mode. For comparison, the overall citation history of all articles out of the ISI subject category Physics published in the year 1975 is shown.

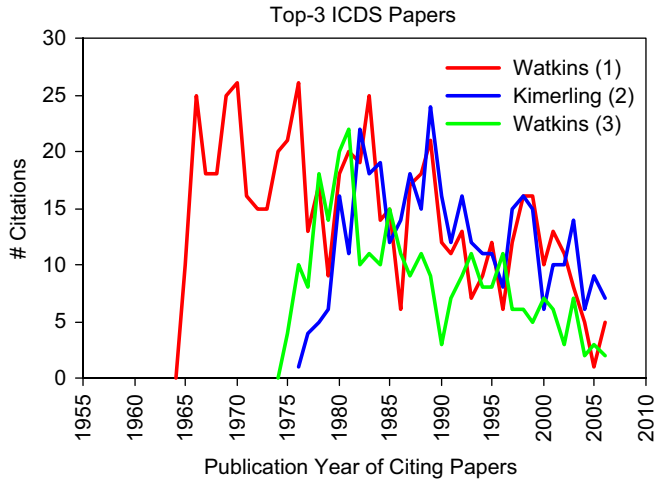

Fig. 3. Time-dependent number of citations (citation history) of the three most highly cited ICDS papers (see top-3 papers in Table 1 below). The curves are colored on the web.

Table 1
The 20 most-cited ICDS publications until May 2007 (date of search: 2007-05-09)

Citations	Author	ICDS Paper
615	Watkins G.D.	Rad. Dam. Sem. P97 (1965)
379	Kimerling L.C.	IOP Conf. Ser. V31 P221 (1977)
287	Watkins G.D.	IOP Conf. Ser. V23 P1 (1975)
276	Watkins G.D.	J. P. Soc. Japan S2 V18 P22 (1963)
260	Gossick B.R.	J. Appl. Phys. V30 P1214 (1959)
241	Lang D.V.	IOP Conf. Ser V31 P70 (1977)
182	Watkins G.D.	J. Appl. Phys. V30 P1198 (1959)
161	Watkins G.D.	IOP Conf. Ser. V46 P16 (1979)
143	Crawford J.H.	J. Appl. Phys. V30 P1204 (1959)
137	Kimerling L.C.	Physica B and C V116 P297 (1983)
135	Kimerling L.C.	IOP Conf. Ser. V46 P273 (1979)
126	Collins R.J.	J. Appl. Phys. V30 P1135 (1959)
125	Watkins G.D.	Rad. Eff. Sem. P67 (1968)
117	Bemski G.	J. Appl. Phys. V30 P1195 (1959)
114	Kimerling L.C.	IOP Conf. Ser. V59 P217 (1981)
114	Kimerling L.C.	Mat. Sci. For. V38 P141 (1989)
111	Mayer H.J.	IOP Conf. Ser. V31 P186 (1977)
108	Fan H.Y.	J. Appl. Phys. V30 P1127 (1959)
107	Brown W.L.	J. Appl. Phys. V30 P1258 (1959)
106	Lang D.V.	IOP Conf. Ser. V23 P581 (1975)

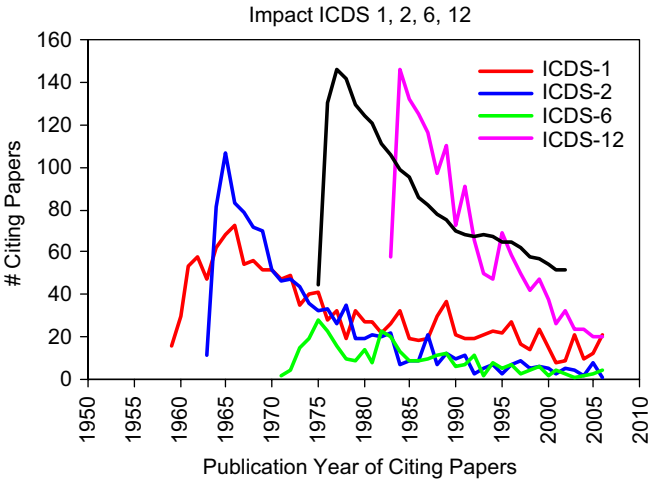

Fig. 4. Time-dependent number of citing papers of four specific ICDS conference series (ICDS-1, ICDS-2, ICDS-6 and ICDS-12). Please note that only the ICDS-6 conference proceedings were published as book. For comparison, the overall citation history of all articles out of the ISI subject category Physics published in the year 1975 is shown (bold curve, scaled by 1/200). The curves are colored on the web.

The total impact had to be determined by using different methods. Altogether we found about 15,000 citing papers (shown in Fig. 2) comprising approximately 25,000 citations. After half a century of ICDS events it is interesting to underscore the most highly cited ICDS papers. The SCI search problems with respect to publications in non-source journals (as mentioned above) exclude establishing a complete listing of the ICDS papers ranked by their number of citations. Even after compiling the data offline many papers do not appear as single entries, but as different versions of one and the same paper, which cannot be automatically combined. But the papers appearing at the top of this listing can be searched separately using the WoS Cited Reference Search mode by taking into account all relevant citation versions and adding their citations. Table 1 shows the top-20 most-cited ICDS papers determined in this way. Sometimes it is difficult to decide whether a specific reference is related to a specific paper. Therefore, the accuracy of Table 2 is somewhat limited.

The Watkins paper "A review on EPR studies in irradiated silicon" appeared in the ICDS-3 conference proceedings, published 1965 as a book [3]. The ICDS-3 conference was held as a separate part 3 of the 7th ICPS in the year 1964 in Paris. Around 100 citations of the Watkins paper erroneously cite this conference instead of the specific ICDS conference, raising the total number of citations to above 600, a lot for articles in proceedings.

5. Analysis of the citing papers

Participating and citing countries: We would have liked to retrieve the list of the countries with personal or written

Table 2
The countries of authors of the citing papers (CP) of the ICDS publications (only countries with more than 100 citing papers since 01/1974)

# CP	% CP	Country of author
2994	24.46	USA
1592	13.01	Germany
1542	12.60	Japan
1135	9.27	England
948	7.74	France
708	5.78	Russia
589	4.81	USSR
530	4.33	Sweden
521	4.26	Poland
396	3.24	Peoples R China
377	3.08	Italy
342	2.79	Fed Rep Ger
259	2.12	Netherlands
241	1.97	Canada
236	1.93	Belgium
215	1.76	Spain
205	1.67	Switzerland
193	1.58	Australia
190	1.55	Denmark
166	1.36	Brazil
149	1.22	Finland
148	1.21	India
144	1.18	Byelarus
141	1.15	South Africa
141	1.15	Ukraine
133	1.09	Austria
132	1.08	South Korea
114	0.93	Portugal
109	0.89	Ger Dem Rep

Table 3
Journals of the citing papers (CP) since 01/1974 of the ICDS publications (only journals with more than 100 citing papers)

# CP	% CP	Citing journal
1326	10.83	Phys. Rev. B
1201	9.81	J. Appl. Phys.
792	6.47	Appl. Phys. Lett.
627	3.77	Physica B
456	3.73	Phys. Status Solidi A-Appl. Res.
350	1.43	Semiconductors
340	2.78	Sov. Phys. Semicond.-USSR
297	2.43	Physica B-Condens. Matter
295	2.41	J. Cryst. Growth
286	2.34	Nucl. Instrum. Methods Phys. Res. Sect. B-Beam Interact. Mater. Atoms
232	1.90	Phys. Rev. Lett.
216	1.76	Phys. Status Solidi B-Basic Res.
214	1.75	Mater. Sci. Eng. B-Solid State Mater. Adv. Technol.
212	1.73	J. Phys.-Condes. Matter
205	1.67	Solid State Commun.
202	1.65	Jpn. J. Appl. Phys. Part 1-Regul. Pap. Short Notes Rev. Pap.
197	1.61	Radiat. Eff. Defects Solids
171	1.40	J. Phys. C-Solid State Phys.
168	1.37	Semicond. Sci. Technol.
158	0.65	Thin Solid Films
153	1.25	J. Electrochem. Soc.
140	1.14	IEEE Trans. Nucl. Sci.
124	1.01	Appl. Phys. A-Mater. Sci. Process.
120	0.98	Defects Semicond.-ICDS-19, PTS 1-3
111	0.91	Acta Phys. Pol. A
102	0.83	ICDS-18-Proceedings of the 18th International Conference on Defects in Semiconductors, PTS 1–4

contributions at the ICDSs. The former is well nigh impossible. The latter can only be done by hand, going through all published papers. This would be a rather titanic bookkeeping task that limitations on our time (and also the allowable length of the manuscript) did not permit us to perform. However, we retrieved the countries of authors of three selected conferences: ICDS-1 manually, ICDS-12 and ICDS-23 by use of the SCI. The 31 manuscripts of the ICDS-1 came all from the US. The ICDS-12 had already become truly international: in the 107 published papers 18 countries were represented (25 papers from the US, 21 from France, 15 from England, 14 from Germany, 13 from Japan…and last but not least, one from Tunisia). A total of 243 papers appeared in the proceedings of the ICDS-23, representing 40 countries: 122 papers from Japan, 41 from the US, 31 from Germany, 18 from the UK, 18 from South Korea, 13 from Russia, which had split from the USSR… and one from Vietnam, which had joined the international scientific community.

It is possible to analyze the approximately 12,000 citing papers since 1974 under STN International and to retrieve the list of all countries citing ICDS articles and the corresponding number of citations. This list, shown in Table 2, can be considered a measure of the interest the ICDSs have generated in the various countries, a surrogate for the number of participants, to some extent even more accurate than the latter since citing scientists may not have been allowed or able to attend. The list shown in Table 3 (limited to countries with more than 100 citing papers) reflects some historical vagaries of the period: countries splitting and merging, the fall of communism, etc. (date of search: 2007-05-09).

Moreover, the citing journals of the ICDS papers were selected and ranked by the number of citing papers and listed in Table 3.

The distribution of the citing journals of ICDS papers on the ISI subject categories (a subject classification scheme related to journals) is shown in Table 4.

6. The first and the second ICDS

There are 50 contributions to the ICDS-1 proceedings (31 regular articles and 19 discussion notes). The total number of citations is 1749, compared with 866 citations of the ICDS-2 proceedings published in the Journal of the Physical Society of Japan. This heralds the importance of this conference. At least 7 ICDS-1 articles have been cited over 100 times, a number which signals papers with a large

Table 4
Distribution of the citing papers (CP) since 01/1974 of the ICDS publications on the ISI subject categories (only subject categories with more than 100 citing papers)

# CP	% CP	Subject category of citing journal
5068	41.40	Physics, Condensed Matter
3492	28.53	Physics, Applied
1206	9.85	Materials Science, Multidisciplinary
832	6.80	Engineering, Electrical & Electronic
776	6.34	Nuclear Science & Technology
739	6.04	Materials Science
566	4.62	Physics
394	3.22	Instruments & Instrumentation
392	3.20	Crystallography
384	3.14	Physics, Nuclear
348	2.84	Physics, Atomic, Molecular & Chemical
290	2.37	Physics, Multidisciplinary
289	2.36	Chemistry, Physical
202	1.65	Materials Science, Coatings & Films
173	1.41	Metallurgy & Metallurgical Eng.
167	1.36	Electrochemistry
159	1.30	Optics

impact. The most-cited paper, by Gossick, (260 times) deals with the size and energy depth of wells created by fast neutron bombardment. It applies these results to discuss concomitant effects such as carrier scattering and recombination, and dielectric constant. The second most-cited article (182 citations) is by George Watkins, one of the most assiduous contributors and attendants to the ICDS: he has attended all conferences except ICDS-4. His ICDS contributions have been cited a total of approximately 3000 times. His contribution to ICDS-1 was on spin resonance in electron-irradiated silicon. He and his coauthors (Corbett, Walker) noticed differences between crucible grown and floating zone grown silicon, which they attribute to different impurities trapping interstitial Si atoms or vacancies. The third most-cited paper (143 citations) is by Crawford and Cleland. It reports measurements of the effect of either gamma ray or neutron bombardment on the electronic gap levels of n- as well as p-type germanium. The article by Collins (126 citations) refers to the edge emission of CdS and how it is affected by irradiation with 1-MeV electrons.

Bemski's contribution deals with the effect of high-energy electron bombardment and the paramagnetic resonance of electrons in Si. Characteristic lines, attributed to the presence of oxygen, are seen for crucible grown but not for floating-zone grown silicon. The presence of 4% 29Si induces hyperfine structure which yields information about the symmetry of the defect. The contribution of Fan and Ramdas discusses the infrared absorption induced by bombardment with various types of high-energy particles (neutrons, deuterons, electrons). The observed absorption refers to radiation induced electron levels and also, at long wavelengths, to vibrational levels. A contribution by Brown, Augustyniak and Waite (Bell Labs) deals with annealing of radiation defects. The foregoing discussion of the most-cited papers in the ICDS-1 emphasizes the dominance, those days, of radiation-induced defects.

References

[1] ICDS-1: Gatlinburg, J. Appl. Phys. 30 (8) (1959) 1117.
[2] ICDS-2: Kyoto, J. Phys. Soc. Japan 18 (Suppl. II & III) (1962).
[3] ICDS-3: Paris-Royaumont, France (1964) Radiation Damage in Semiconductors, Dunod, Paris, 1965.
[4] ICDS-4: Tokyo, Japan (1966) Lattice Defects in Semiconductors, University of Tokyo Press, Tokyo, 1968 The Pennsylvania State University Press, University Park and London (1968).
[5] ICDS-5: Santa Fe, USA (1967) Radiation Effects in Semiconductors, Plenum Press, New York, 1968.
[6] ICDS-6: Albany, USA (1970) Radiation Effects in Semiconductors, Gordon and Breach Science Publishers, London, New York, Paris, ISBN 0-677-15080-6, 1971.
[7] ICDS-7: Reading, England (1972), Radiation Damage and Defects in Semiconductors, IOP Conference Series Number 16, The Institute of Physics, London and Bristol, 1973, ISBN:0-85498-106-3.
[8] ICDS-8: Freiburg, Germany (1974), Lattice Defects in Semiconductors, IOP Conference Series Number 23, The Institute of Physics, London and Bristol, 1975, ISBN:0-85498-113-6.
[9] ICDS-9: Dubrovnik, Yugoslavia (1976), Radiation Effects in Semiconductors, IOP Conference Series Number 31, The Institute of Physics, London and Bristol, 1977, ISBN:0-85498-121-7.
[10] ICDS-10: Nice, France (1978), Defects and Radiation Effects in Semiconductors, IOP Conference Series Number 46, The Institute of Physics, London and Bristol, 1979, ISBN:0-85498-137-3.
[11] ICDS-11: Oiso, Japan (1980), Defects and Radiation Effects in Semiconductors, IOP Conference Series Number 59, The Institute of Physics, London and Bristol, 1981, ISBN:0-85498-150-0.
[12] ICDS-12: Amsterdam, Physica B 116 (1983).
[13] ICDS-13: Coronado (CA), USA (1984) Defects in Semiconductors, The Metallurgical Society of AIME—American, Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., ISBN 0-89520-485-1, 1985.
[14] ICDS-14: Paris, France (1986) Defects in Semiconductors, Materials Science Forum 10–12 (1986) Part 1–3, Trans Tech Publications, Switzerland, Germany, UK, USA, 1986.
[15] ICDS-15: Budapest, Hungary (1988) Defects in Semiconductors, Materials Science Forum 38–41 (1989) Part 1–3, Trans Tech Publications, Switzerland, Germany, UK, USA, 1989.
[16] ICDS-16: Bethlehem (PA), USA (1991) Defects in Semiconductors, Materials Science Forum 83–87 (1992) Part 1–3, Trans Tech Publications, Switzerland, Germany, UK, USA, 1992.
[17] ICDS-17: Gmunden, Austria (1993) Defects in Semiconductors, Materials Science Forum 143–147 (1994) Part 1–3, Trans Tech Publications, Switzerland, Germany, UK, USA, 1994.
[18] ICDS-18: Sendai, Japan (1995) Defects in Semiconductors, Materials Science Forum 196–201 (1995) Part 1–4, Trans Tech Publications, Switzerland, Germany, UK, USA, 1995.
[19] ICDS-19: Aveiro, Portugal (1997) Defects in Semiconductors, Materials Science Forum 258–263 (1997) Part 1–3, Trans Tech Publications, Switzerland, Germany, UK, USA, 1997.
[20] ICDS-20: Berkeley, Physica B 273–274 (1999).
[21] ICDS-21: Giessen, Physica B 308–310 (2001).
[22] ICDS-22: Aarhus, Physica 340–342 (2003).
[23] ICDS-23: Awaji Island, Physica 376–377 (2006).
[24] ICDS-24: Albuquerque, USA (2007), Physica B.
[25] H. Brooks, in: Advances in Electronics and Electron, Physics, vol. VII, Academic Press, NY, 1955.
[26] S.C. Bradford, Engineering 137 (1934) 85–86.