

# IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) on Wikipedia

(1) This version of the document corresponds to the UFFC-S Wikipedia page on the Wikipedia website: “[18:32, 19 December 2017](#)” (55,573 bytes in length). Compared to the “[20:00, 15 December 2017](#)” version (151,766 bytes in length), it is shortened to about one-third after removing many figures and all lists of UFFC-S annual symposia (modified by following the suggestions from UFFC-S colleagues). From your web browser on a computer, you can click the “View history” tab of the Wikipedia page “[18:32, 19 December 2017](#)” above to view all versions. Notice that since Wikipedia pages can be modified by anyone and the changes can be substantial, one has to refer to the specific revision “[18:32, 19 December 2017](#)” to relate it to this document. However, even the specific revisions above can be “deleted” and hid from public view by Wikipedia administrators at anytime.

(2) This document is in three formats with identical contents. They are accessible at:

- (i) [http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/05\\_uffcs\\_on\\_wikipedia.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/05_uffcs_on_wikipedia.pdf) (PDF format)
- (ii) [http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/05\\_uffcs\\_on\\_wikipedia.doc](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/05_uffcs_on_wikipedia.doc) (MS Word format)
- (iii) [http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/05\\_uffcs\\_on\\_wikipedia.txt](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/05_uffcs_on_wikipedia.txt) (This .txt file contains the Wikipedia source codes that can be used to recreate the Wikipedia page corresponding to this document. To use the codes, please click on the tab “Edit” at the webpage “[18:32, 19 December 2017](#)” and then simply copy/paste the source codes to replace the existing codes in the editing box there.)

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*(Draft Created: June 2, 2012; Latest Revision: **December 19, 2017**)*

## Notes

**Note 1:** This document was created on June 2, 2012. The first draft of the document was sent out for comments on June 11, 2012. Since then, I have got some feedback, comments, suggestions, and data. Especially, I got detailed edits of the document in MS Word “Track Changes” from Dr. Mike Garvey, a former UFFC-S President. After 5-years of work, I have finally completed the document with updated information and placed it on Wikipedia the first time on July 31, 2017. I would like to thank

Mike and all others who have helped and contributed to the improvement of the document. --- *Jian-yu Lu*, Ph.D., 2016-2017 Junior Past President, IEEE UFFC-S, August 1, 2017.

**Note 2:** The URL of the Wikipedia page of UFFC-S is given by:

[https://en.wikipedia.org/wiki/IEEE\\_Ultrasonics,\\_Ferroelectrics,\\_and\\_Frequency\\_Control\\_Society](https://en.wikipedia.org/wiki/IEEE_Ultrasonics,_Ferroelectrics,_and_Frequency_Control_Society)

**Note 3:** The contents of this document are mostly copied, modified, or compiled from the following sources (also, data were collected in the early 2000s when I was the Editor-in-Chief of IEEE TUFFC and helped UFFC-S to post the pre-1988 IEEE TUFFC and symposium proceedings of all three technical areas and missing documents between 1989 and 2005 into IEEE Xplore):

- (1) **UFFC-S website:** <http://www.ieee-uffc.org/>
- (2) **IEEE website:** <http://www.ieee.org/>
- (3) **UFFC-S Constitutions:** <https://ieee-uffc.org/about-us/governing-documents/uffc-constitution/>
- (4) **UFFC-S Bylaws:** <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/>
- (5) **UFFC-S AdCom minutes archive:** <https://ieee-uffc.org/publications/adcom-minutes/>
- (6) **UFFC-S Newsletter archive:** <https://ieee-uffc.org/uffc-s-newsletters/>
- (7) **Proceedings of IEEE IUS, IEEE ISAF, and IEEE IFCS in IEEE Xplore:**  
<http://ieeexplore.ieee.org/Xplore/home.jsp>
- (8) **“From PGUE to G-SU to UFFC-S: 1953-1997, A Historical Perspective” by Fred Hickernell:** <https://ieee-uffc.org/about-us/history/uffc-s-history/from-pgue-to-g-su-to-uffc-s-1953-1997-a-historical-perspective/>
- (9) **Information on Operations of IEEE UFFC-S AdCom:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/02\\_info\\_on\\_adcom\\_operations.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/02_info_on_adcom_operations.pdf)
- (10) **Job Descriptions for IEEE UFFC-S Leaders:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/03\\_uffcs\\_job\\_descriptions\\_lu.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/03_uffcs_job_descriptions_lu.pdf)
- (11) **“Information, History, and Operations of IEEE TUFFC” in IEEE Xplore:**  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4803150>
- (12) **Organization of IEEE UFFC-S Conferences (including IEEE IUS history since 1959):**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi.pdf)
- (13) **A Sample Calendar of Events of IEEE UFFC-S Conferences:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi\\_calendar.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi_calendar.pdf)
- (14) **Tutorial of Mira Software for IEEE UFFC-S Conferences:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi\\_mira\\_tutorials.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi_mira_tutorials.pdf)
- (15) **Fillable Conference Data Collection Form for IEEE UFFC-S Conferences** (download first before filling in):  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/00\\_uffcs\\_conf\\_data\\_collection\\_fillable.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/00_uffcs_conf_data_collection_fillable.pdf)
- (16) **A Sample Meeting Schedule for IEEE UFFC-S Conferences:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_z\\_appendix\\_c\\_mtg\\_schedules\\_2008\\_lu.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_z_appendix_c_mtg_schedules_2008_lu.pdf) ;  
**Excel Sheet:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_z\\_appendix\\_c\\_mtg\\_schedules\\_2008\\_lu.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_z_appendix_c_mtg_schedules_2008_lu.xls)
- (17) **IEEE IUS Historical Data Plots Since 1959:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots.pdf);

**Excel data file:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots.xls)

- (18) **IEEE ISAF Historical Data Plots Since 1968:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_isaf.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_isaf.pdf);

**Excel data file:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_isaf.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_isaf.xls)

- (19) **IEEE IFCS Historical Data Plots Since 1947:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_ifcs.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_ifcs.pdf);

**Excel data file:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_ifcs.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_ifcs.xls)

- (20) **2008 IEEE IUS Website:** [http://ewh.ieee.org/conf/ius\\_2008/](http://ewh.ieee.org/conf/ius_2008/)

**Note 4:** A fillable PDF Conference Data Collection Form has been produced for future IEEE UFFC-S conference organizers (download first before filling in):

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/00\\_uffcs\\_conf\\_data\\_collection\\_fillable.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/00_uffcs_conf_data_collection_fillable.pdf)

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## The InforBox “Organization”

The following are the “Wiki Codes” that are used to produce an Information Box on the upper right of the Wikipedia.

IEEE UFFC-S Logo:



```
{ {Infobox organization
| logo           = [[File:Wiki_uffc_s_000_logo_ieee_blue_big.jpg|center|96px|alt=UFFC-S
Logo|UFFC-S Logo]]
| logo_size      = 256 x 257
| name           = IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society
| type           = [[Professional association]]
| founded_date   = { {start date and age|1953|3|26} }
| origins        = The [[Institute of Radio Engineers]]
| area_served    = Worldwide
| focus          = Ultrasonics, Ferroelectrics, and Frequency Control
| method         = Publications, Conferences, and Industry standards
| membership     = 2,200+
| founder        = Amor. L. Lane, First President
| key_people     = Clark T.-C. Nguyen, Current President
| parent_organization = IEEE
| website        = { {URL|https://ieee-uffc.org/} }
}}
```

## Introduction

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) is one of more than 40 scientific and technical professional societies and councils of the IEEE ( [https://en.wikipedia.org/wiki/Institute\\_of\\_Electrical\\_and\\_Electronics\\_Engineers](https://en.wikipedia.org/wiki/Institute_of_Electrical_and_Electronics_Engineers) ). (IEEE has more than 400,000 members in more than 160 countries.) The IEEE UFFC-S started as the Professional Group on Ultrasonics Engineering (PGUE) of the Institute of Radio Engineers (IRE), Inc. in 1953, and has had its present name since 1986.

**Field of Interests:** According to the UFFC-S Constitution ( <https://ieee-uffc.org/about-us/governing-documents/uffc-constitution/> ), the field of interest of the UFFC-S shall include theory, technology, materials, and applications relating to:

The generation, transmission, and detection of ultrasonic waves and related phenomena.

- (1) Medical ultrasound and associated technologies.
- (2) Ferroelectric, piezoelectric, and piezomagnetic materials.
- (3) Frequency generation and control, timing, and time coordination and distribution.

This interest ranges from fundamental studies to the design and/or applications of devices, sensors, systems, and manufacturing technologies within the general scope defined above.

**Photos and Videos:** An introduction video of the UFFC-S is accessible via YouTube at: [https://www.youtube.com/watch?v=LA0h1\\_2rIrs&feature=youtu.be](https://www.youtube.com/watch?v=LA0h1_2rIrs&feature=youtu.be) . More photos and videos on the UFFC-S activities can be found at: <http://ewh.ieee.org/soc/uffc/publicity/>



**Figure.** [A video Introduction to IEEE UFFC-S \(click the link here to play the video!\)](https://www.youtube.com/watch?v=LA0h1_2rIrs&feature=youtu.be)

**Topic Organization:** Except “Section 3. UFFC-S Administration”, the topics below are organized according to the 16 UFFC-S Standing Committees as prescribed in the UFFC-S Bylaws ( <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/> ).

## 1. Brief History

### 1.1. History of UFFC-S

As early as October 1952, at 25 years of age, Amor Lane of the Naval Ordnance Laboratory discussed with leaders of the Acoustical Society of America (ASA) within the Institute of Radio Engineers (IRE) to form the Professional Group on Ultrasonics Engineering (PGUE) that is the start of IEEE UFFC-S. In March 1953 during the IRE convention, PGUE was formed by its first Chairman (now called President), Amor L. Lane, and those interested in ultrasonics. The scope of PGUE was piezoelectric devices, for example, frequency control and other devices, and their applications. In 1963, the Institute of Electrical and Electronics Engineers (IEEE) was incorporated under the Not-for-Profit Corporation Law of the state of New York in the United States and was formed by the merger of the IRE (founded 1912) and the American Institute of Electrical Engineers (AIEE, founded 1884). Since then, the PGUE has become part of the IEEE. In addition, the name of PGUE was changed to Professional Technical Group on Ultrasonics Engineering (PTGUE).

On May 6, 1953, the first Administrative Committee (AdCom) meeting of the newly formed PGUE was held in Washington D.C. The first AdCom felt that it was very important to have a journal where members could publish their papers. The first issue of the Transactions of the Professional Group on Ultrasonics Engineering was published in June, 1954, one year after formation of PGUE. The first Editor-in-Chief of the Transactions was Oskar E. Mattiat of Clevite-Brush Development Co., ably assisted by a Paper Review Board of three from the Electrical Engineering Department of the University of Illinois. The review board was led by Dr. William J. Fry, with Frank J. Fry, a brother, and Floyd Dunn, a graduate student under Fry, assisting. The review board ceased in 1962, and Associate Editors were appointed in 1963.

In March, 1958, Dr. John May Jr. of Bell Telephone Laboratories was elected Chairman of the AdCom of PGUE. He realized that there had to be more than just one or two technical sessions at major conferences in order to support and maintain the interest of the membership. On Monday August 17, 1959, the First National Ultrasonics Symposium (with an attendance of 50 and 15 submitted papers), which was the start toward what was to become the annual IEEE International Ultrasonics Symposium (IUS) (with an attendance of 1375 and 1181 submitted abstracts for 2016 IEEE IUS), was held, on the day prior to the IRE Western Electronics Show and Convention (WESCON), with Dr. Vincent Salmon of Stanford Research Institute as its General Chair of this first symposium. On November 28-30, 1962, the second Ultrasonics Symposium was held at the School of Applied Science and Engineering, Columbia University, in New York City. From 1962 on, the Ultrasonics Symposium continued as an annual event.

In 1970, the tutorial and invited papers for the Ultrasonics Symposium were published first time as the 1970 Ultrasonics Symposium Proceedings with Lawrence Kessler as the Proceedings Editor. The 1972 Ultrasonics Symposium Proceedings with John De Klerk as the Proceedings Editor included contributed papers and was the 2<sup>nd</sup> Proceedings. Since then, the Proceedings are published annually.

Near the end of 1963, the name of the Society was changed from the Professional Technical Group on Ultrasonics Engineering to the Group on Sonics and Ultrasonics (GSU) with a broadened definition of the scope of interest for the group. The name "Sonics" was incorporated to encompass a wide range of frequencies of elastic wave phenomena from the upper frequency regions perceived by the human ear to those regions which were sometimes designated as supersonic and pretersonic. There would still be the focus on the "Ultrasonic" aspects of sound as applied to measurement, control, processing, and



device development. The name "Ultrasonics" assured continued focus on all aspects of ultrasound including phonon technology.

In August, 1966, the GSU roster showed 1181 members of which 974 (82%) were from the United States and 207 (18%) outside the states. For countries outside the U.S., Japan led the way with 65, followed by 36 from Canada, 24 from the United Kingdom, 18 from France, 12 from Italy, and 11 from Sweden. As of July 28, 2017, the membership roster of IEEE UFFC-S shows 2195 members with a distribution of number of members in IEEE Regions 1-7 (USA and Canada) 1118 (51%), Region 8 (Europe, Middle East, and Africa) 588 (27%), Region 9 (Latin America) 29 (1%); and Region 10 (Asia and Pacific) 460 (21%).

In 1966, one of the committees of GSU was the Technical Committee on Transducers and Resonators (TC-TR), in addition to the Committee on Sonics and Ultrasonics. TC-TR had three subcommittees in the areas of: (i) piezoelectric crystals, (ii) piezoelectric ceramics, and (iii) piezomagnetism. By 1971, subcommittees on (iv) delay lines, (v) medical ultrasonics, and (vi) ferroelectric crystals had been added.

The transition to the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S) took place under the leadership of Dr. Herman van de Vaart who was the GSU president from 1984-1985. Ferroelectrics had been an integral part of the society since the late 1960's under the TC-TR. The TC-TR committee had co-sponsored a Symposium on Application of Ferroelectrics held at Catholic University on October of 1968. In 1971, the Subcommittee on Ferroelectrics had become an integral part of the TC-TR and a second Symposium on the Applications of Ferroelectrics was organized and held in June, 1971, in Yorktown Heights, jointly sponsored with IBM and the Army Research office in Durham, NC. With the establishment of the UFFC-S, and the revised Bylaws accepted in October, 1985, a Ferroelectrics Standing Committee was added and the Chair became a voting member of AdCom.

Similarly, a Frequency Control Standing Committee was added and its Chair also became a voting member of AdCom. The Frequency Control part of the UFFC-S brought with it a long history of technical contributions which were highlighted by the annual Frequency Control Symposium (FCS) started in 1947. The first symposium, sponsored by the U. S. Army at Fort Monmouth, NJ, was held in a conference room in the Squier Laboratory. The purpose of the meeting, which was attended by personnel from the three armed services, contractors, and members of a sub-panel on frequency control, was to review progress with the contractors and assist the military in future program planning. During subsequent meetings it was expanded to include others and subsequently moved outside the Ft. Monmouth facility. In 1982, the GSU assumed financial responsibility and technical co-sponsorship with the U. S. Army.

**Note:** UFFC-S has a History Standing Committee, which is one of the 16 UFFC-S Standing Committees. The Committee has a web page ( <https://ieee-uffc.org/about-us/history/> ) that contains a wealth of information on the UFFC-S history. A lot of information in this subsection is either copied directly or modified from the article: "From PGUE to G-SU to UFFC-S: 1953-1997, A Historical Perspective" by Dr. Fred Hickernell ( <https://ieee-uffc.org/about-us/history/uffc-s-history/from-pgue-to-g-su-to-uffc-s-1953-1997-a-historical-perspective/> ).

## 1.2. History of Changes of Names of the UFFC-S

- (1) **1953-1962:** IRE Professional Group on Ultrasonics Engineering (PGUE)
- (2) **1963:** IEEE Professional Technical Group on Ultrasonics Engineering (PTGUE)

- (3) **1964:** IEEE Professional Technical Group on Sonics and Ultrasonics
- (4) **1964-1980:** IEEE Group on Sonics and Ultrasonics
- (5) **1981-1985:** IEEE Sonics and Ultrasonics Group
- (6) **1986-2017:** IEEE Ultrasonics, Ferroelectrics, and Frequency Control

**Note:** IRE is short for the Institute of Radio Engineers.

### 1.3. A List of UFFC-S Presidents

- (1) *Amor L. Lane*, 1953-1955
- (2) *F. D. Fagen*, 1956
- (3) *J. F. Herrick*, 1956-1957
- (4) *C. M. Harris*, 1957-1958
- (5) *J. E. May, Jr.*, 1958-1959
- (6) *W. Roth*, 1959-1960
- (7) *D. L. Arenberg*, 1961
- (8) *V. Salmon*, 1961-1962
- (9) *A. H. Meitzler*, 1962-1963
- (10) *J. J. G. McCue*, 1963-1965
- (11) *T. R. Meeker*, 1965-1966
- (12) *J. H. Rowen*, 1966-1967
- (13) *D. L. White*, 1968
- (14) *E. K. Sittig*, 1969
- (15) *W. J. Spencer*, 1970-1971
- (16) *L. W. Kessler*, 1972-1973
- (17) *N. F. Foster*, 1974
- (18) *A. J. Bahr*, 1975
- (19) *L. T. Claiborne*, 1976
- (20) *J. de Klerk*, 1977-1978
- (21) *G. A. Alers*, 1979-1980
- (22) *T. W. Bristol*, 1981
- (23) *William. D. O'Brien*, 1982-1983
- (24) *Herman van de Vaart*, 1984-1985
- (25) *B. R. McAvoy*, 1986-1987
- (26) *G. W. Farnell*, 1988-1989
- (27) *Jan Brown*, 1990-1991
- (28) *James F. Greenleaf*, 1992-1993
- (29) *H. L. Salvo, Jr.*, 1994-1995
- (30) *Donald C. Malocha*, 1996-1997
- (31) *John R. Vig*, 1998-1999
- (32) *Fred S. Hickernell*, 2000-2001
- (33) *Ahmad Safari*, 2002-2003
- (34) *Gerald V. Blessing*, 2004-2005
- (35) *Art Ballato*, 2006-2007
- (36) *Susan Trolier-McKinstry*, 2008-2009
- (37) *R. Michael Garvey*, 2010-2011
- (38) *Jacqueline H. Hines*, 2012-2013
- (39) *Jian-yu Lu*, 2014-2015

(40) *Clark C.-T. Nguyen*, 2016-2017

## 1.4. UFFC-S AdCom Rosters

The UFFC-S AdCom rosters since 2004 are accessible at: <https://ieee-uffc.org/about-us/governing-documents/uffc-adcom-archive/>

## 1.5. More to Read about the History of IEEE UFFC-S and IEEE

Please visit the following website for more information on:

(i) UFFC-S history, (ii) History of Ultrasonics, (iii) History of Ferroelectrics, and (iv) History of Frequency Control: <https://ieee-uffc.org/about-us/history/uffc-s-history/>

The history of IEEE can be found at the IEEE History Center: [https://www.ieee.org/about/history\\_center/index.html](https://www.ieee.org/about/history_center/index.html) . Most of the resources of the IEEE History Center are available at the Engineering and Technology History Wiki: [http://ethw.org/Main\\_Page](http://ethw.org/Main_Page)

## 2. Member Services

Member Services is one of the 16 UFFC-S Standing Committees and are charged with development of UFFC-S membership: <https://ieee-uffc.org/membership/member-services/>

According to UFFC-S Bylaws ( <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/> ): “A UFFC-S member is an individual who is an IEEE member or IEEE Society Affiliate and has paid the annual UFFC-S dues prescribed in Section 4 of these Bylaws, or who is a qualifying IEEE Life Member as prescribed in the IEEE Bylaws.”

As of **July 28, 2017**, there are **2195** members in the IEEE UFFC-S as follows (notice that the numbers may be fluctuating during the year):

Regional Distribution (assuming that the total is 100%):

- (1) **IEEE Regions 1-7 (USA and Canada): 1118 (51%)**
- (2) **Region 8 (Europe, Middle East, and Africa): 588 (27%)**
- (3) **Region 9 (Latin America): 29 (1%)**
- (4) **Region 10 (Asia and Pacific): 460 (21%)**

Gender Distribution (assuming that the total is 100%):

- (1) **Male: 1776 (81%)**
- (2) **Female: 176 (8%)**
- (3) **Unspecified: 243 (11%)**

Member Grade Distribution (assuming that the total is 100%):

- (1) **Society Affiliate: 40 (1.8%)**
- (2) **Associate Member: 21 (1%)**
- (3) **Undergraduate Student Member: 52 (2.4%)**
- (4) **Graduate Student Members: 320 (14.6%)**
- (5) **Member: 1172 (53%)**
- (6) **Life Member: 108 (5%)**
- (7) **Senior Member: 289 (13%)**

- (8) **Life Senior Member: 64 (2.9%)**
- (9) **Fellows: 53 (2.4%)**
- (10) **Life Fellow: 69 (3.1%)**

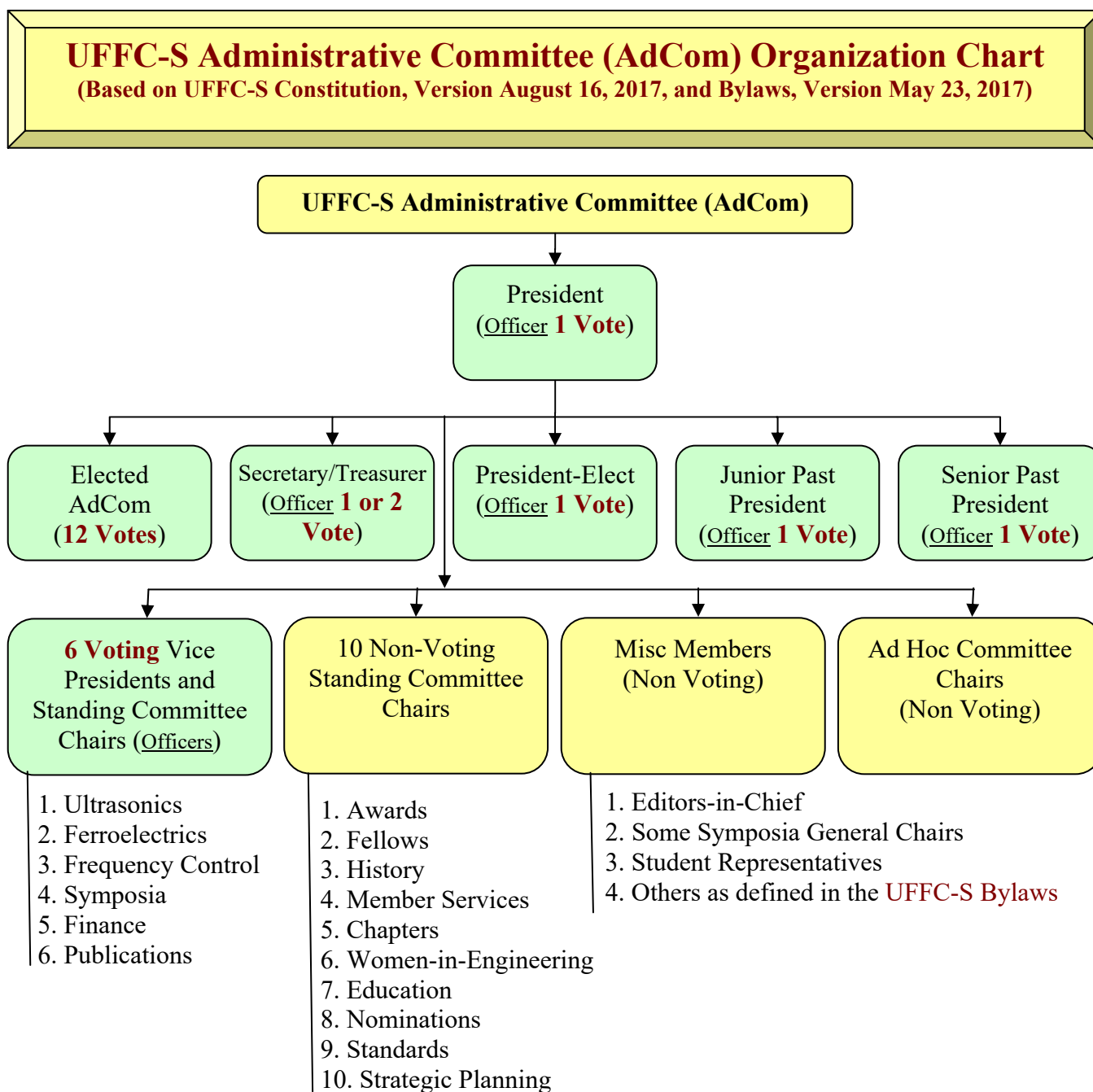
From the statistics above, it is seen that the UFFC-S has a much higher percentage of IEEE Fellows (**5.5%**) than the IEEE average of about **1.5%**. A list of **IEEE Fellows of UFFC-S** is at: <https://ieee-uffc.org/membership/ieee-fellows-of-the-uffc-society/>

To join IEEE UFFC-S, please click the link at: <https://www.ieee.org/membership-catalog/productdetail/showProductDetailPage.html?product=MEMUFFC020>

### 3. UFFC-S Administration

#### 3.1. Organization Chart of the UFFC-S Administrative Committee (AdCom)

A summary of the organization of the UFFC-S AdCom is given in the figure below. Details of the UFFC-S AdCom operations can be found at [http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/02\\_info\\_on\\_adcom\\_operations.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/02_info_on_adcom_operations.pdf)



**Figure 1.** Organization Charts of IEEE UFFC-S

### 3.2. UFFC-S AdCom Meetings

One of the important duties of the UFFC-S AdCom is to hold twice-a-year AdCom meetings. Typically, each AdCom meeting is a one full day long, tightly scheduled meeting, and is generally followed by an optional evening social event. During these meetings, both elected and other AdCom members and other AdCom contributors are provided information via reports from chairs of various committees and reports of the operations of the UFFC-S. Questions, discussions, and actions are an integral part of these meetings. The AdCom meetings are run according to rules in the order of IEEE

governing documents, UFFC-S governing documents, and Robert's Rules of Order ( <http://www.robertsrules.com/> ).

### **3.3. UFFC-S Committees**

#### **3.3.1. Standing Committees**

According to the UFFC-S Bylaws ( <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/> ): “Standing Committees may be added or deleted by AdCom as the need arises through amendment of the UFFC-S Bylaws. Standing Committee Chairs shall be appointed by the President and ratified by a majority of Elected AdCom Members. While the terms of office shall be one year, consecutive terms of office are not limited by the UFFC-S Bylaws.” The 16 UFFC-S Standing Committees are given below (the Chairs of the first 6 Standing Committees below are Voting Members of AdCom):

- (1) Ultrasonics
- (2) Ferroelectrics
- (3) Frequency Control
- (4) Symposia
- (5) Finance
- (6) Publications
- (7) Awards
- (8) Fellows
- (9) History
- (10) Member Services
- (11) Chapters
- (12) Women-in-Engineering
- (13) Education
- (14) Nominations
- (15) Standards
- (16) Strategic Planning

#### **3.3.2. Ad Hoc Committees**

Also from the UFFC-S Bylaws: “Special or Ad Hoc Committees may be created by the President without approval by AdCom as the need arises, as provided for in Section 5.3 of the UFFC-S Constitution. The President shall define the purpose of the Committee and may provide guidance for how long the Committee shall be constituted, the number of members the Committee shall have, how the members are to be selected, and the terms of office of the Chair and the members. All Ad Hoc Committees should disband at the end of the calendar year or the end of the appointing President's term of office. The Ad Hoc Committee may be reappointed by the President's successor.”

### **3.4. UFFC-S Governing and Informational Documents**

Some governing and informational documents of UFFC-S can be found from:

- (1) **UFFC-S Constitution:** <https://ieee-uffc.org/about-us/governing-documents/uffc-constitution/>
- (2) **UFFC-S Bylaws:** <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/>
- (3) **UFFC-S Travel and Reimbursement Policy:** [http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/04\\_ieee\\_uffcs\\_travel\\_reimbursement\\_policy\\_final.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/04_ieee_uffcs_travel_reimbursement_policy_final.pdf)

- (4) **UFFC-S AdCom Operation Information:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/02\\_info\\_on\\_adcom\\_operations.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/02_info_on_adcom_operations.pdf)
- (5) **Job Descriptions for IEEE UFFC-S Leaders:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/03\\_uffcs\\_job\\_descriptions\\_lu.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/03_uffcs_job_descriptions_lu.pdf)
- (6) **Others:** <https://ieee-uffc.org/about-us/governing-documents/>

The document “[Job Descriptions for IEEE UFFC-S Leaders](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/03_uffcs_job_descriptions_lu.pdf)” may also be useful for anyone who would like to be a volunteer of IEEE UFFC-S.

## 4. Ultrasonics

Ultrasonics is one of the 16 UFFC-S Standing Committees. The Committee is responsible for any aspects related to the Ultrasonics technical area, which is one of the three major technical areas of the UFFC-S. Detailed information on Ultrasonics can be found at a UFFC-S webpage at <https://ieee-uffc.org/ultrasonics/> and UFFC-S Bylaws at <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/>.

## 5. Ferroelectrics

Ferroelectrics is one of the 16 UFFC-S Standing Committees. The Committee is responsible for any aspects related to the Ferroelectrics technical area, which is one of the three major technical areas of the UFFC-S. Detailed information on Ferroelectrics can be found at a UFFC-S webpage at <https://ieee-uffc.org/ferroelectrics/> and UFFC-S Bylaws at <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/>.

## 6. Frequency Control

Frequency Control is one of the 16 UFFC-S Standing Committees. The Committee is responsible for any aspects related to the Frequency Control technical area, which is one of the three major technical areas of the UFFC-S. Detailed information on Frequency Control can be found at a UFFC-S webpage at <https://ieee-uffc.org/frequency-control/> and UFFC-S Bylaws at <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/>.

## 7. Finance

Finance is one of the 16 UFFC-S Standing Committees. The finance of UFFC-S is handled by the Finance Committee. The UFFC-S finance is to ensure the financial ability of UFFC-S to serve the professional communities, such as giving over \$100,000 per year to support travels of students to attend UFFC-S conferences to help their professional development. The income of UFFC-S is from activities such as publications, conferences, and membership dues.

## 8. Awards

### 8.1. Honors and Awards

Awards is one of the 16 UFFC-S Standing Committees. The UFFC-Society has been honored, as its members have received many awards and honors. UFFC-S members have been honored by Presidents,



knighted by Royalty, medaled by an Emperor, received international awards, and have been elected to prestigious Academies of Engineering and Science.

## 8.2. **UFFC Society Awards**

UFFC-S has four Society-level awards as follows. A list of awardees can be found by following links:

- (1) **Achievement Award** – this award has been given since 1980 ( [http://iee-uffc.org/award\\_category/uffc-society-awards/achievement-award/](http://iee-uffc.org/award_category/uffc-society-awards/achievement-award/) )
- (2) **Distinguished Service Award** – this award has been given since 1997 ( [http://iee-uffc.org/award\\_category/uffc-society-awards/distinguished-service-award/](http://iee-uffc.org/award_category/uffc-society-awards/distinguished-service-award/) )
- (3) **Distinguished Lecturer Award** – this award has been given since 1980 ( [http://iee-uffc.org/award\\_category/uffc-society-awards/distinguished-lecturer-award/](http://iee-uffc.org/award_category/uffc-society-awards/distinguished-lecturer-award/) )
- (4) **Outstanding Paper Award** – this award has been given since 1956 ( [http://iee-uffc.org/award\\_category/uffc-society-awards/outstanding-paper-award/](http://iee-uffc.org/award_category/uffc-society-awards/outstanding-paper-award/) )

## 8.3. **UFFC Section Awards**

UFFC-S also has about a dozen of awards administered by the three Technical Standing Committees (Ultrasonics, Ferroelectrics, and Frequency Control) to honor contributors in their respective technical areas: <https://iee-uffc.org/home/awards/>

## 9. **Fellows**

Fellows is one of the 16 UFFC-S Standing Committees. UFFC-S has about 5.5% of IEEE Fellows in its membership as of July 28, 2017. This is much higher than the average of about 1.5% in the entire IEEE.

- (1) A list of **IEEE Fellows of UFFC-S** according to year conferred can be found at: <https://iee-uffc.org/membership/ieee-fellows-of-the-uffc-society/>
- (2) **IEEE Fellows of UFFC-S listed alphabetically** can be found at: <https://iee-uffc.org/membership/ieee-fellows-of-the-uffc-society-alphabetical-list/>
- (3) The **IEEE Fellow directory** can be found at: [http://www.ieee.org/membership\\_services/membership/fellows/fellowsDirectory.html#](http://www.ieee.org/membership_services/membership/fellows/fellowsDirectory.html#)

## 10. **Chapters**

Chapters is a new addition and is one of the 16 UFFC-S Standing Committees. UFFC-S is encouraging the development of new IEEE UFFC-S Chapters and Student Branch Chapters around the world. Also, UFFC-S is working with the Chapters to ensure that they remain active after creation. The duties and responsibilities of the Committee is prescribed in the UFFC-S Bylaws: <https://iee-uffc.org/about-us/governing-documents/uffc-bylaws/>

## 11. **Women-in-Engineering**

Women-in-Engineering is a new addition and is one of the 16 UFFC-S Standing Committees. UFFC-S has about 8% of female members as of July 28, 2017. UFFC-S organizes activities in all three annual conferences. Details of the activities can be found at the UFFC-S website: <https://iee-uffc.org/membership/women-in-engineering-wie/>



## 12. Education

Education is a new addition and is one of the 16 UFFC-S Standing Committees. The education activities can be found at the UFFC-S website: <https://ieee-uffc.org/education-and-learning-resources/>

The learning resources of the three technical areas of UFFC-S can be found at:

- (1) **Ultrasonics:** <http://ieee-uffc.org/ultrasonics/learning-resource/>
- (2) **Ferroelectrics:** <http://ieee-uffc.org/ferroelectronics/learning-resources/>
- (3) **Frequency Control:** <http://ieee-uffc.org/frequency-control/learning-resources/>

## 13. Nominations

Nominations is one of the 16 UFFC-S Standing Committees. The Committee nominates outstanding members of UFFC-S for Elected AdCom election by UFFC-S members. The Committee also nominates candidates of the President-Elect of UFFC-S. See UFFC-S Bylaws for more details: <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/>

## 14. Standards

Standards is one of the 16 UFFC-S Standing Committees. Activities of the Committee can be found at: <https://ieee-uffc.org/home/standards/>

## 15. Strategic Planning

Strategic Planning is one of the 16 UFFC-S Standing Committees. It develops a long-range planning of the UFFC-S and make recommendations for UFFC-S AdCom actions as prescribed in the UFFC-S Bylaws: <https://ieee-uffc.org/about-us/governing-documents/uffc-bylaws/>

## 16. Publications

Publications is one of the 16 UFFC-S Standing Committees. UFFC-S maintains a website and publishes a Newsletter, AdCom minutes, an archival journal named “IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control” (TUFFC), and conference proceedings for each of the three annual symposia sponsored or co-sponsored by the Society. Additional documents (e.g., full-text books and reports) that are of interest to the UFFC-S membership have also been made available on its website. Access to most of these publications requires the UFFC-S membership. Access to the TUFFC and symposia proceedings is now provided through IEEE Xplore ( <http://ieeexplore.ieee.org/Xplore/home.jsp> ). The home page of IEEE TUFFC is at: <https://ieee-uffc.org/publications/transactions-on-uffc/>

### 16.1. UFFC-S Website

UFFC-S hosts a website that contains a wealth of information that covers almost all aspects of the UFFC-S such as history, governance, symposia, publications, awards, and more. The UFFC-S Web site is accessible at: <http://www.ieee-uffc.org>

## 16.2. Newsletter

The first UFFC-S newsletter was published in 1953. Starting 2015, newsletters are published as news columns on the UFFC-S website: <https://ieee-uffc.org/news/>

## 16.3. IEEE TUFFC

### 16.3.1. **Brief History of TUFFC**

The IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (TUFFC) is a prestige peer-reviewed archival journal of the UFFC Society. It was founded in June 1954 with the name of “Transactions of IRE”, where IRE was short for the Institute of Radio Engineers. In May 1955, the name was changed to “IRE Transactions on Ultrasonics Engineering”; in 1963, it adopted the name “IEEE Transactions on Ultrasonics Engineering”, and in 1964, the name became “IEEE Transactions on Sonics and Ultrasonics”. Beginning 1986, the name “IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control” has been used until present (2017).

During its journey for more than 60 years, TUFFC has served its research communities by publishing archival papers and other manuscripts and has evolved to become one of the leading journals in our disciplines. Several Editors-in-Chief have served for the TUFFC so far. Today, TUFFC has grown from a journal that published 35 pages in 1954 to one that publishes more than 3000 pages. It has expanded from a journal that published semiannually (1954-1965), quarterly (1966-1974), bi-monthly (1975-2001), to one that publishes monthly (2002-2017).

More details and the operations of IEEE TUFFC can be found from an article in IEEE Xplore that is accessible at <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4803150> or from a file at [http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/08\\_appendix\\_i\\_tuffc\\_info\\_450\\_low.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/08_appendix_i_tuffc_info_450_low.pdf) that includes bookmarks and linked Table of Contents.

### 16.3.2. **Editors-in-Chief of TUFFC in Chronological Sequence**

- (1) **Oskar E. Mattiat** (June 1954 – May 1971)  
Clevite-Brush Development Co.  
Cleveland, Ohio, USA
- (2) **Stephen Wanuga** (July 1971 - September 1985)  
General Electric Co.  
Syracuse, New York, USA
- (3) **William D. O’Brien, Jr., Ph.D.** (November 1985 – December 2001)  
Professor  
University of Illinois  
Urbana, Illinois, USA
- (4) **Jian-yu Lu, Ph.D.** (January 2002 – December 2007) ([A Report](#))  
Professor  
The University of Toledo

Toledo, Ohio, USA

- (5) **Marjorie Passini Yuhas, Ph.D.** (January 2008 – January 2013)

Industrial Measurement Systems Inc.

Aurora, Illinois, USA

- (6) **Steven Freear, Ph.D.** (February 2013 – )

University of Leeds

Leeds, United Kingdom

### 16.3.3. **Evolution of the Journal Name, Publisher, and Publication Frequency of TUFFC**

- (1) **Journal Title:** *Transactions of IRE* (June 1954 – November 1954)

**Publisher:** Published by the Institute of Radio Engineers, Inc., for the Professional Group on Ultrasonics Engineering

**Publication Frequency:** Semi-Annually

- (2) **Journal Title:** *IRE Transactions on Ultrasonics Engineering* (May 1955 - December 1962)

**Publisher:** Published by the Institute of Radio Engineers, Inc., for the Professional Group on Ultrasonics Engineering

**Publication Frequency:** Semi-Annually

- (3) **Journal Title:** *IEEE Transactions on Ultrasonics Engineering* (July 1963 – December 1963)

**Publisher:** Published by the Institute of Electrical and Electronics Engineers, Inc., for the Professional Technical Group on Ultrasonics Engineering

**Publication Frequency:** Semi-Annually

- (4) **Journal Title:** *IEEE Transactions on Sonics and Ultrasonics* (July 1964 – November 1985)

**Publisher:** Published by the Institute of Electrical and Electronics Engineers, Inc., for the Sonics and Ultrasonics Group

**Publisher:** Published by the Institute of Electrical and Electronics Engineers, Inc. (starting July 1966)

**Publication Frequency:** Quarterly (1966-1974)

**Publication Frequency:** Bi-Monthly (1975-1985)

- (5) **Journal Title:** *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* (January 1986 – Present)

**Publisher:** Published by the Institute of Electrical and Electronics Engineers, Inc.

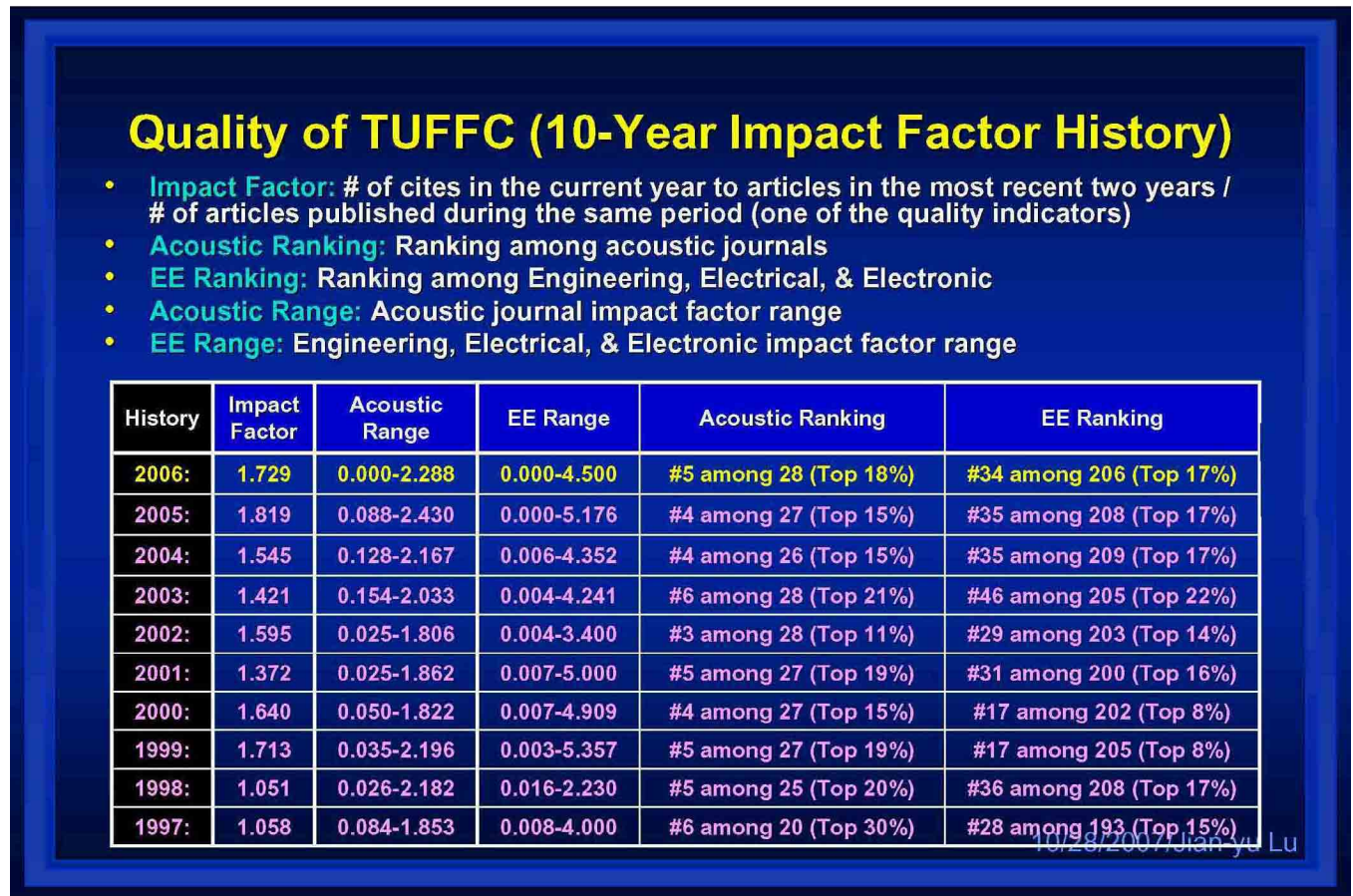
**Publication Frequency:** Bi-Monthly (1985-2001)

**Publication Frequency:** Monthly (January 2002 – 2017)

#### 16.3.4. ***Impact Factor and Ranking***

In **2017**, IEEE TUFFC has an impact factor of **2.743**. As a comparison, the impact factor of Ultrasound in Medicine and Biology is 2.494, and the impact factor of Ultrasonics is 2.327. More about the UFFC-S impact factors can be found at: <https://ieee-uffc.org/publications/impact-factor/>.

Impact factors of some earlier years (1997-2006) are given in the table below as a reference:



**Figure2 :** Impact Factors of IEEE TUFFC from 1997-2006

## 17. Symposia

Symposia is one of the 16 UFFC-S Standing Committees. The UFFC-S sponsors three annual technical conferences in its three technical areas:

- (1) **IEEE International Ultrasonics Symposium (IUS):** <https://ieee-uffc.org/ultrasonics/ultrasonics-symposia/>
- (2) **IEEE International Symposium on Applications of Ferroelectrics (ISAF):** <https://ieee-uffc.org/ferroelectrics/ferroelectrics-symposia/>
- (3) **IEEE International Frequency Control Symposium (IFCS):** <https://ieee-uffc.org/frequency-control/frequency-control-symposia/>

## 17.1. A Brief Introduction to IEEE IUS

The IEEE IUS started from the 1959 National Ultrasonics Symposium that was a one-day conference at the Stanford University, Stanford, California, U.S.A. on August 17, 1959. The conference had about 50 attendees and there were 15 papers presented. The General Chair was Vincent Salmon and the registration fee was \$3. The second Ultrasonics Symposium, named “1962 Ultrasonics Symposium” was held on November 28-30, 1962, at Horace Mann Auditorium, School of Applied Science and Engineering, Columbia University, New York City, New York, U.S.A, sponsored by the Professional Group on Ultrasonics Engineering (PGUE), Institute of Radio Engineers (IRE). The General Chair was J. E. May, Jr. and the conference registration fee was also \$3. No conference proceedings were produced except a conference program book that contains both the program and abstracts. Since then, the conference is run once a year.

More details on the history and organizations of an IEEE UFFC-S conference are given below:

- (1) **Organization of IEEE UFFC-S Conferences:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi.pdf)
- (2) **A Sample Calendar of Events of IEEE UFFC-S Conferences:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi\\_calendar.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi_calendar.pdf)
- (3) **Tutorial of Mira Software for IEEE UFFC-S Conferences:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi\\_mira\\_tutorials.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi_mira_tutorials.pdf)
- (4) **A Sample Meeting Schedule for IEEE UFFC-S Conferences:**  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_z\\_appendix\\_c\\_mtg\\_schedules\\_2008\\_lu.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_z_appendix_c_mtg_schedules_2008_lu.pdf)
- (5) **Fillable Conference Data Collection Form for IEEE UFFC-S Conferences** (download first before filling in):  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/00\\_uffcs\\_conf\\_data\\_collection\\_fillable.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/00_uffcs_conf_data_collection_fillable.pdf)

### 17.1.1. History of Changes of Conference Names

The conference names have been changed over the years as follows:

- (6) **1962-1963:** Ultrasonics Symposium
- (7) **1964:** Symposium on Sonics and Ultrasonics
- (8) **1967:** IEEE Symposium on Sonics and Ultrasonics
- (9) **1968-1993:** IEEE Ultrasonics Symposium
- (10) **1994-2003:** IEEE International Ultrasonics Symposium (IUS)
- (11) **2004:** IEEE International Ultrasonics, Ferroelectrics, and Frequency Control Joint 50th Anniversary Conference
- (12) **2005-2012:** IEEE International Ultrasonics Symposium (IUS)
- (13) **2013:** IEEE UFFC-S Joint Conference
- (14) **2014-Present:** IEEE International Ultrasonics Symposium (IUS)

### 17.1.2. History of Changes of Names of Conference Proceedings

The names of the conference proceedings have also been changed. Please notice that the 2008 IEEE IUS has changed the name of the proceedings again by adding “International” after “IEEE”. The change was in response to a previously approved UFFC-S AdCom motion and to reflect the changed name of our conferences since 1994 (see the name changes of the conferences above).

- (1) **1959, 1962-1969:** None
- (2) **1970:** Ultrasonics Symposium Proceedings (11 Invited Papers only)



- (3) **1971:** None
- (4) **1972-1983:** 1972-1983 Ultrasonics Symposium Proceedings
- (5) **1984-1993:** IEEE 1984-1993 Ultrasonics Symposium Proceedings
- (6) **1994-2007:** 1994-2007 IEEE Ultrasonics Symposium Proceedings
- (7) **2008-Present:** IEEE International Ultrasonics Symposium Proceedings – 2008 is the first year that multimedia and DVD (instead of CD) proceedings was produced with advanced Mira IndexSMART browsing and searching capabilities.

### **17.1.3. History of Conference Sponsoring Societies**

Over the years, the name of the sponsoring society of the IEEE IUS is also changed:

- (1) **1962:** Professional Group on Ultrasonics Engineering, Institute of Radio Engineers (IRE)
- (2) **1963:** Professional Technical Group on Ultrasonics Engineering, IEEE
- (3) **1964-1967:** Sonics and Ultrasonics Group, IEEE
- (4) **1968-1985:** Group on Sonics and Ultrasonics, IEEE
- (5) **1986-Present:** Ultrasonics, Ferroelectrics, and Frequency Control Society, IEEE

### **17.1.4. Trend of IEEE IUS**

The following charts show the trends of IEEE IUS. A more recent version with more charts can be viewed via the links below:

#### **IEEE IUS Historical Data Plots Since 1959:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots.pdf)

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots.xls)

More details and explanations of the charts can be found in:

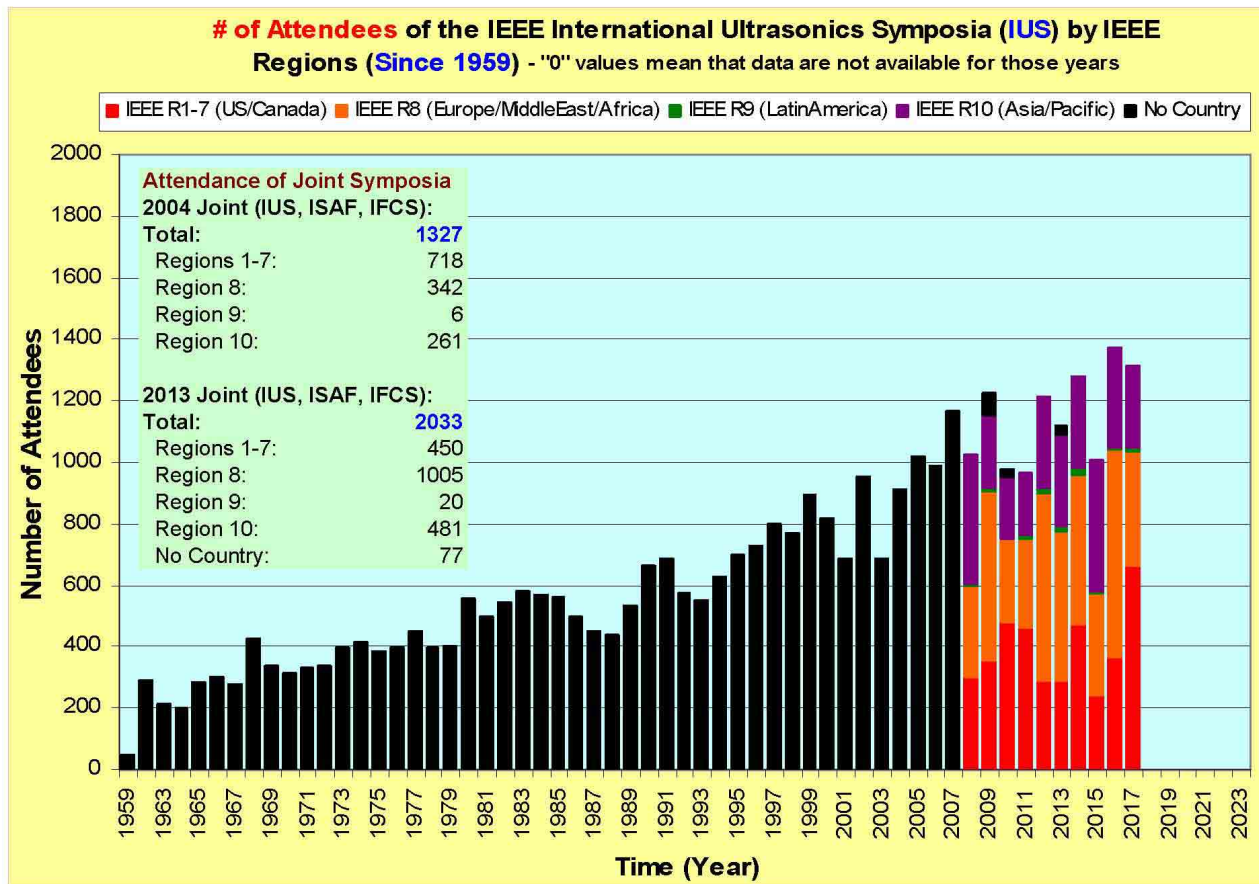
#### **Organization of IEEE UFFC-S Conferences:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi.pdf)

The number of attendees of IEEE IUS since 1959 is shown in the following chart (whenever possible, guest registrants, exhibitors, and staff are included in addition to technical program attendees). The IEEE Regions are of the following meanings: (i) Regions 1-7: USA and Canada; (ii) Region 8: Europe, Middle East, and Africa; (iii) Region 9: Latin America; (iv) Region 10: Asia and Pacific. Since some of the entries may not have a country associated with them, they are placed in “No Country” category. Please notice that the 2004 and 2013 IEEE IUS are joint conferences (2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control Joint 50th Anniversary Conference, and 2013 IEEE UFFC-S Joint Conference - A Joint meeting of IUS, ISAF, IFCS, EFTF, and PFM) and the chart shows only the IEEE IUS portion.

<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



Created: July 6, 2009; Latest Revision: December 17, 2017

By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

**Figure 3.** Number of attendees of IEEE IUS

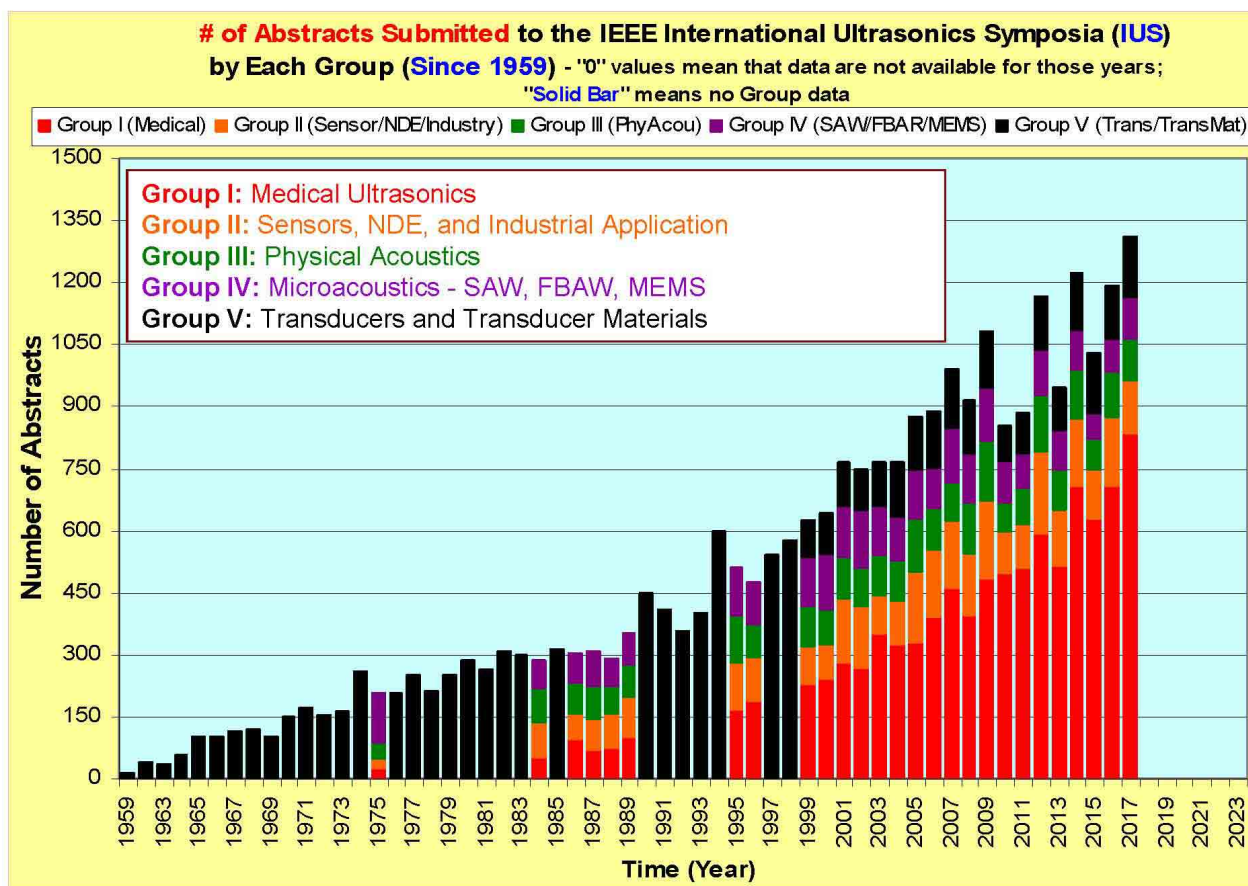
The five technical groups of IEEE IUS in the charts below are defined as follows (there may be fewer groups in early years):

- (1) **Group I:** Medical Ultrasonics
- (2) **Group II:** Sensors, NDE, and Industrial Application
- (3) **Group III:** Physical Acoustics
- (4) **Group IV:** Microacoustics - SAW, FBAW, MEMS
- (5) **Group V:** Transducers and Transducer Materials

The number of abstracts submitted since 1959 is shown in the following chart ("0" values mean that data are not available at the moment for those years, and if the entire bar is black, the data are not separated into groups) (from 2008 to 2017 IEEE IUS, the number of papers submitted are only those submitted "Successfully" in the Mira system of Mira Digital Publishing, Saint Louis, Missouri, U.S.A.):

<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



Created: July 6, 2009; Latest Revision: December 19, 2017

By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

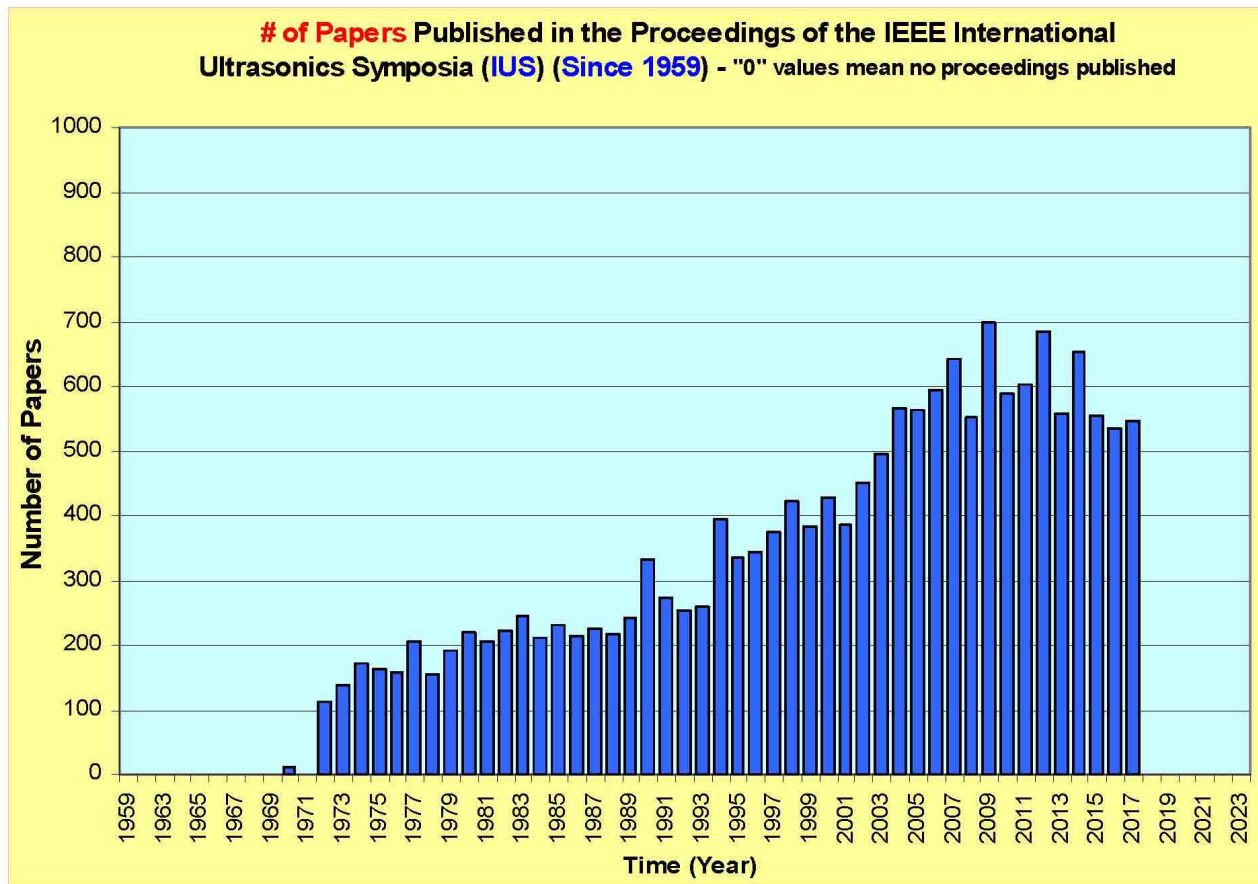
**Figure 4.** Abstracts submitted of IEEE IUS

The following chart shows the number of papers published in the proceedings ("0" values mean that no proceedings were published in those years) (data were obtained from the published proceedings):



<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



Created: July 6, 2009; Latest Revision: November 29, 2017

By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

**Figure 5.** Proceedings papers published of IEEE IUS**17.1.5. Statistics and Organization of 2008 IEEE IUS**

As an example of IEEE IUS, detailed statistics with PIE charts and organization of the 2008 IEEE IUS are available on the conference website: [http://ewh.ieee.org/conf/ius\\_2008/](http://ewh.ieee.org/conf/ius_2008/), specifically, at:

[http://ewh.ieee.org/conf/ius\\_2008/zz\\_index/z29c\\_conference\\_statistics\\_index.html](http://ewh.ieee.org/conf/ius_2008/zz_index/z29c_conference_statistics_index.html) and  
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi.pdf), respectively.

**17.1.6. A List of IEEE IUS**

A complete list of all IEEE International Ultrasonics Symposia (IUS) since 1959 (including for each symposium: (i) Conference Name; (ii) General Chair; (iii) TPC Chair; (iv) Venue; (v) Location; (vi) Dates; (vii) Sponsor; (viii) Proceedings, and (xi) Websites) can be found in the following two files:

**MS Excel Spreadsheet of a complete list of the IEEE IUS Since 1959:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots.xls)

**Organization of IEEE UFFC-S Conferences:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_200dpi.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_200dpi.pdf)

**17.2. A Brief Introduction to IEEE ISAF**

The Ferroelectrics Standing Committee of the IEEE UFFC Society is responsible for the organization of the annual International Symposium on Applications of Ferroelectrics (ISAF). More details and some history of ISAF can be found at: <https://ieee-uffc.org/ferroelectrics/> . The following charts on IEEE ISAF are work in progress and will be updated as more data are available.

**17.2.1. Trend of IEEE ISAF**

The following charts show the trends of IEEE ISAF. A more recent version with more charts can be viewed via the links below:

**IEEE ISAF Historical Data Plots Since 1968:**

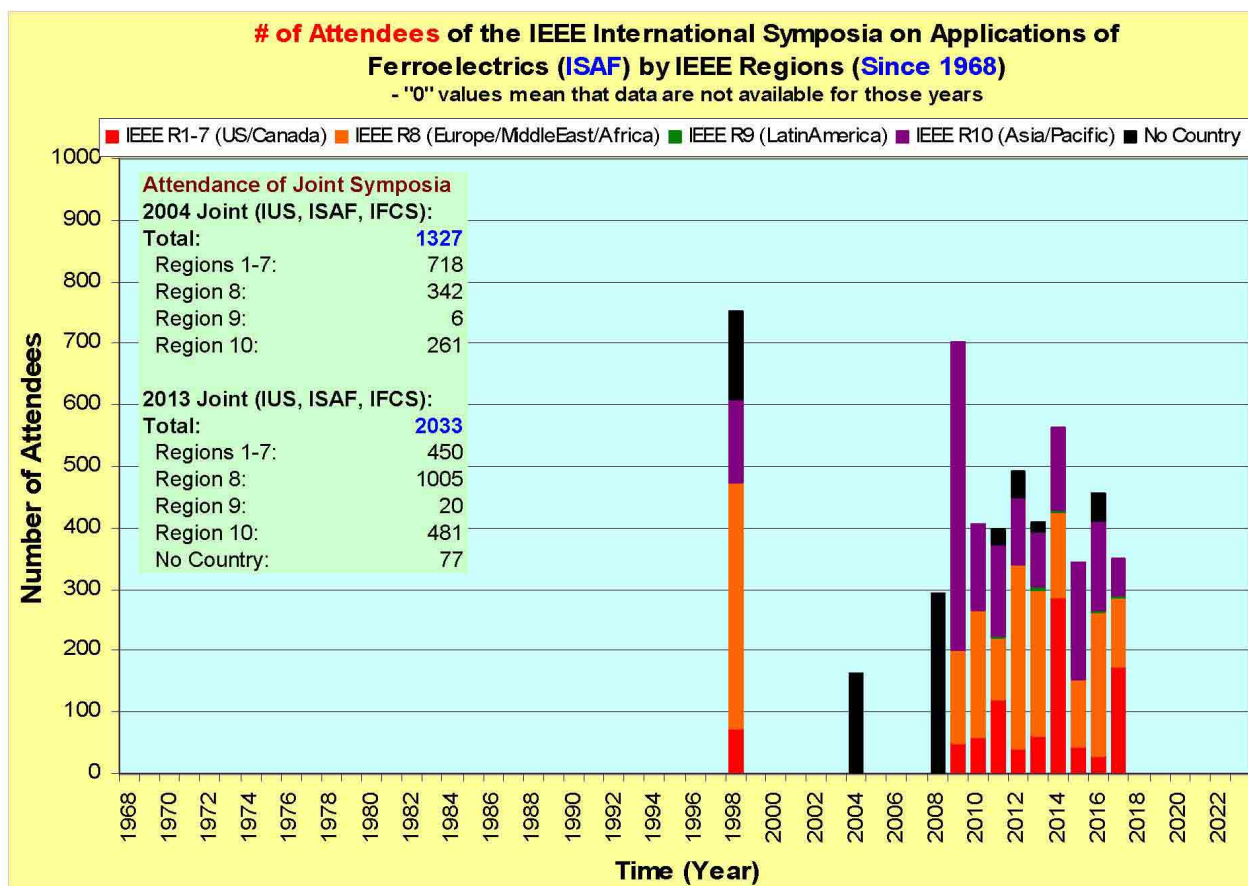
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_isaf.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_isaf.pdf)

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_isaf.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_isaf.xls)

The number of attendees of IEEE ISAF since 1968 is shown in the following chart (whenever possible, guest registrants, exhibitors, and staff are included in addition to technical program attendees). The IEEE Regions are of the following meanings: (i) Regions 1-7: USA and Canada; (ii) Region 8: Europe, Middle East, and Africa; (iii) Region 9: Latin America; (iv) Region 10: Asia and Pacific. Since some of the entries may not have a country associated with them, they are placed in “No Country” category. Please notice that the 2004 and 2013 IEEE ISAF are joint conferences (2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control Joint 50th Anniversary Conference, and 2013 IEEE UFFC-S Joint Conference - A Joint meeting of IUS, ISAF, IFCS, EFTF, and PFM) and the chart shows only the IEEE ISAF portion.

<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



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By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

**Figure 6.** Number of attendees of IEEE ISAF

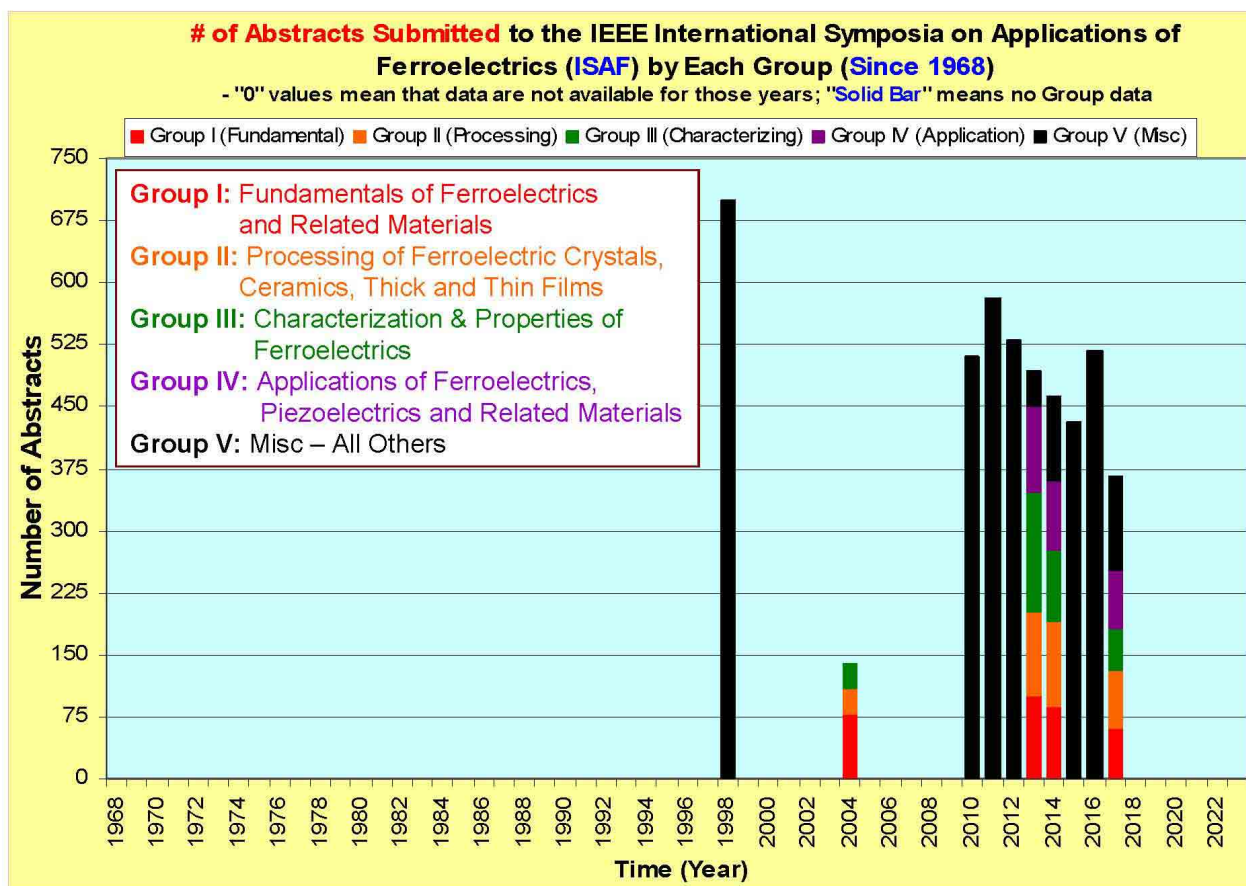
The five technical groups of IEEE ISAF in the charts below are defined as follows (there may be fewer groups in early years):

- (1) **Group I:** Fundamentals of Ferroelectrics and Related Materials
- (2) **Group II:** Processing of Ferroelectric Crystals, Ceramics, Thick and Thin Films
- (3) **Group III:** Characterization & Properties of Ferroelectrics
- (4) **Group IV:** Applications of Ferroelectrics, Piezoelectrics and Related Materials
- (5) **Group V:** Misc - Acoustic Transducers & Applications (IWATMD) and All Others

The number of abstracts submitted since 1968 is shown in the following chart ("0" values mean that data are not available at the moment for those years, and if the entire bar is black, the data are not separated into groups):

<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



Created: July 6, 2009; Latest Revision: November 29, 2017

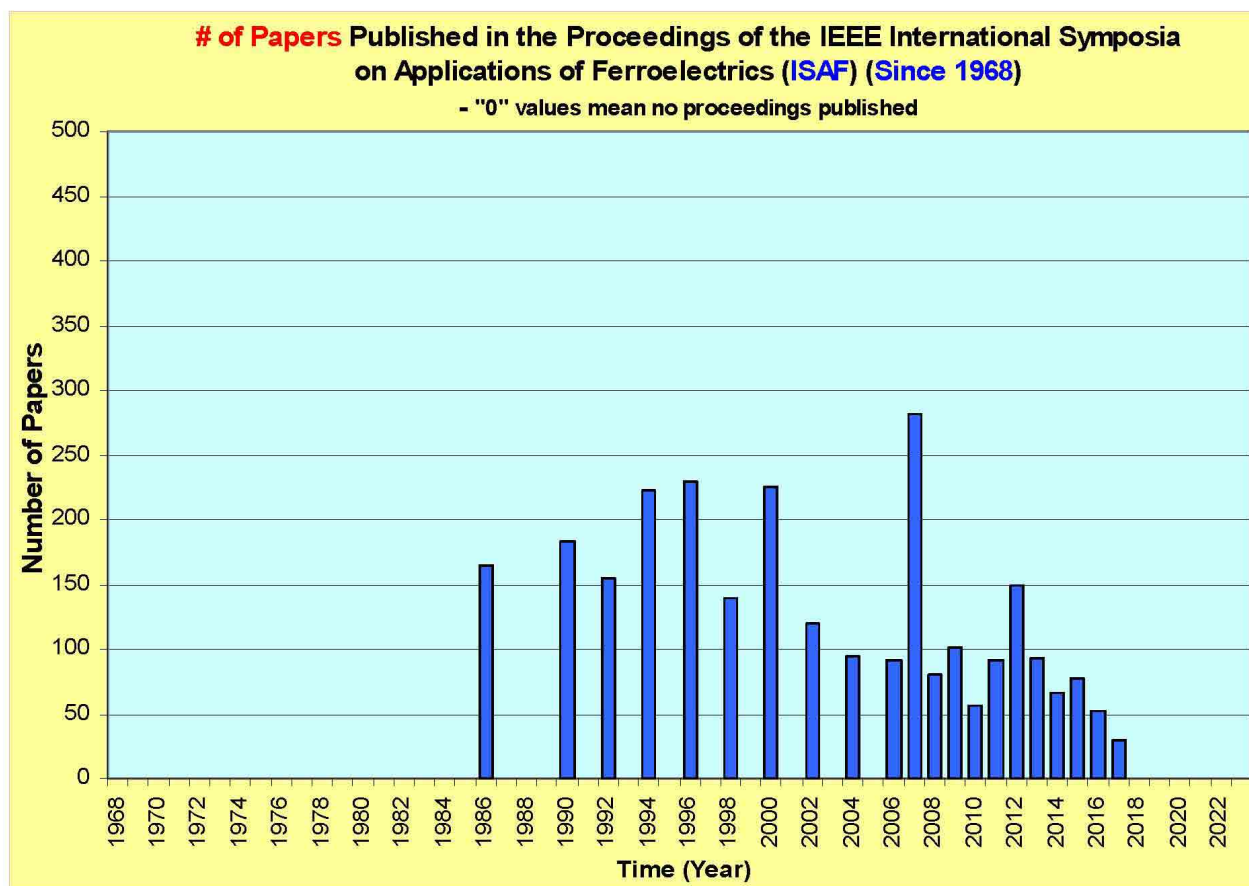
By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

**Figure 7.** Abstracts submitted of IEEE ISAF

The following chart shows the number of papers published in the proceedings ("0" values mean that no proceedings were published in those years) (data were obtained from the published proceedings):

<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



Created: July 6, 2009; Latest Revision: November 29, 2017

By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

**Figure 8.** Proceedings papers published of IEEE ISAF

### 17.2.2. A List of IEEE ISAF

A complete list of all IEEE International Symposium on Applications of Ferroelectrics (ISAF) since 1968 (including for each symposium: (i) Conference Name; (ii) General Chair; (iii) TPC Chair; (iv) Venue; (v) Location; (vi) Dates; (vii) Sponsor; (viii) Proceedings, and (xi) Websites) can be found in the following file:

**MS Excel Spreadsheet of a complete list of the IEEE ISAF Since 1968:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_isaf.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_isaf.xls)

### 17.3. A Brief Introduction to IEEE IFCS

The Frequency Control Standing Committee of the IEEE UFFC Society is responsible for organization of the annual International Frequency Control Symposium (IFCS). More details and

some history of IFCS can be found at: <https://ieee-uffc.org/frequency-control/> . The following charts on IEEE IFCS are work in progress and will be updated as more data are available.

### **17.3.1. Trend of IEEE IFCS**

The following charts show the trends of IEEE IFCS. A more recent version with more charts can be viewed via the links below:

#### **IEEE IFCS Historical Data Plots Since 1947:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_ifcs.pdf](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_ifcs.pdf)

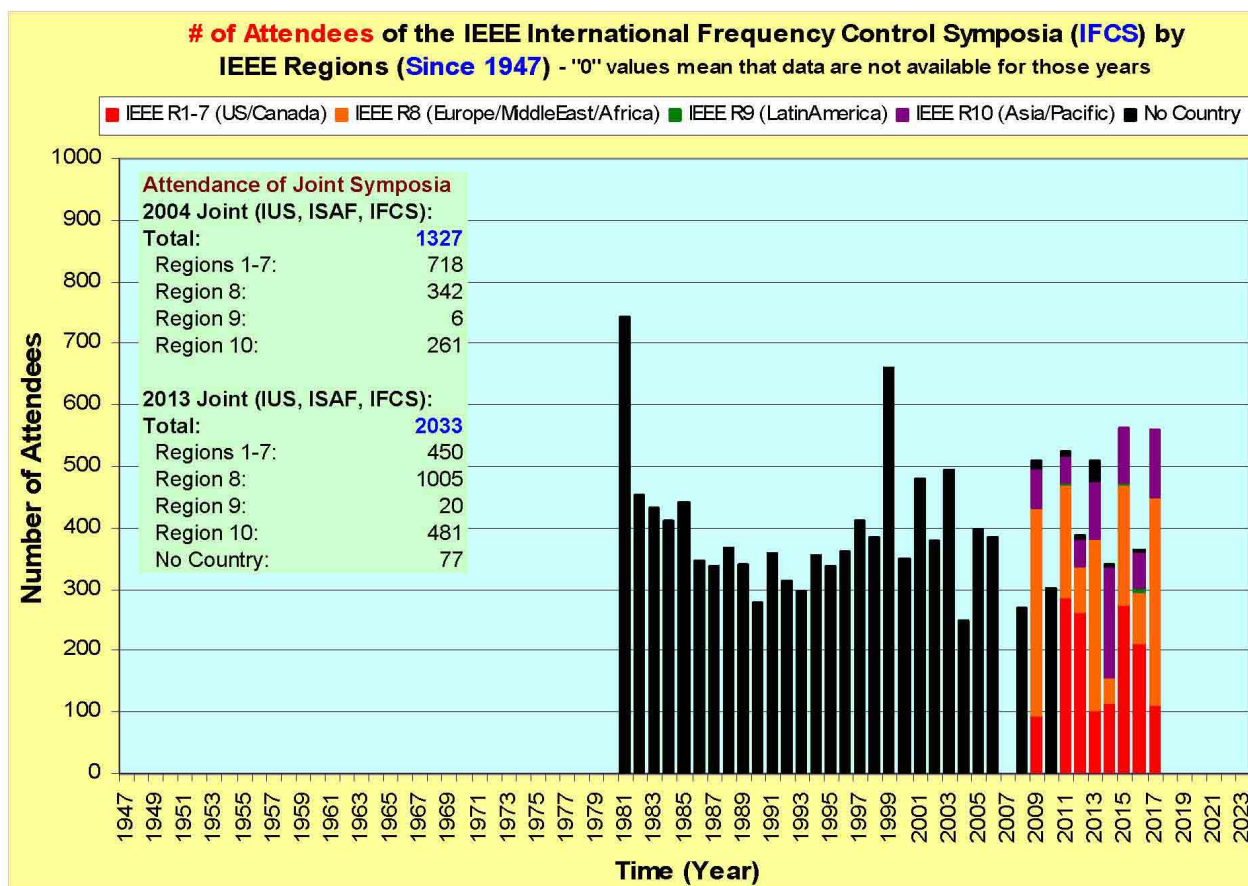
[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_ifcs.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_ifcs.xls)

The number of attendees of IEEE IFCS since 1947 is shown in the following chart (whenever possible, guest registrants, exhibitors, and staff are included in addition to technical program attendees). The IEEE Regions are of the following meanings: (i) Regions 1-7: USA and Canada; (ii) Region 8: Europe, Middle East, and Africa; (iii) Region 9: Latin America; (iv) Region 10: Asia and Pacific. Since some of the entries may not have a country associated with them, they are placed in “No Country” category. Please notice that the 2004 and 2013 IEEE IFCS are joint conferences (2004 IEEE International Ultrasonics, Ferroelectrics, and Frequency Control Joint 50th Anniversary Conference, and 2013 IEEE UFFC-S Joint Conference - A Joint meeting of IUS, ISAF, IFCS, EFTF, and PFM) and the chart shows only the IEEE IFCS portion.



<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



Created: July 6, 2009; Latest Revision: December 17, 2017

By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

**Figure 9.** Number of attendees of IEEE IFCS

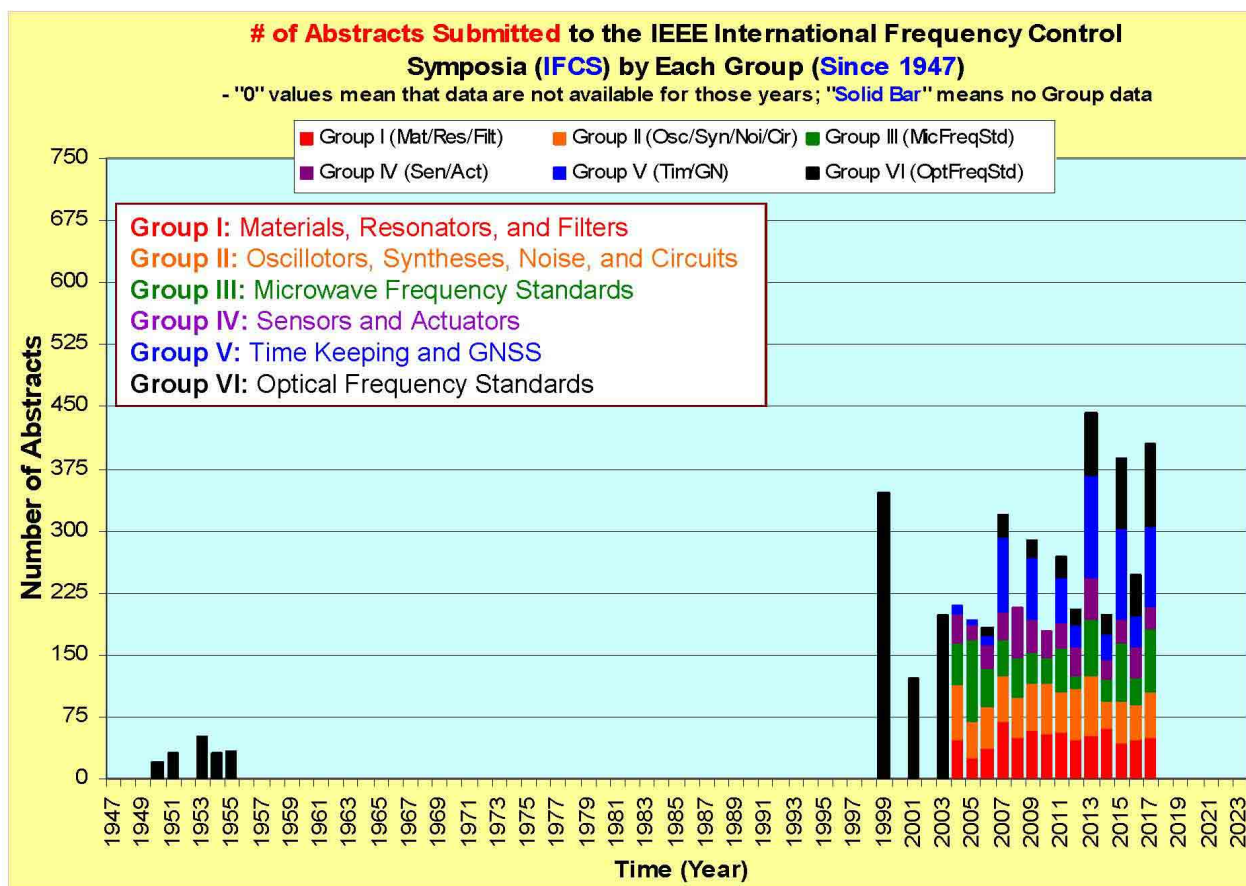
The six technical groups of IEEE IFCS in the charts below are defined as follows (there may be fewer groups in early years):

- (1) **Group I:** Materials, Resonators, and Filters
- (2) **Group II:** Oscillators, Syntheses, Noise, and Circuits
- (3) **Group III:** Microwave Frequency Standards
- (4) **Group IV:** Sensors and Actuators
- (5) **Group V:** Time Keeping and GNSS
- (6) **Group VI:** Optical Frequency Standards

The number of abstracts submitted since 1947 is shown in the following chart ("0" values mean that data are not available at the moment for those years, and if the entire bar is black, the data are not separated into groups):

<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



Created: July 6, 2009; Latest Revision: November 29, 2017

By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

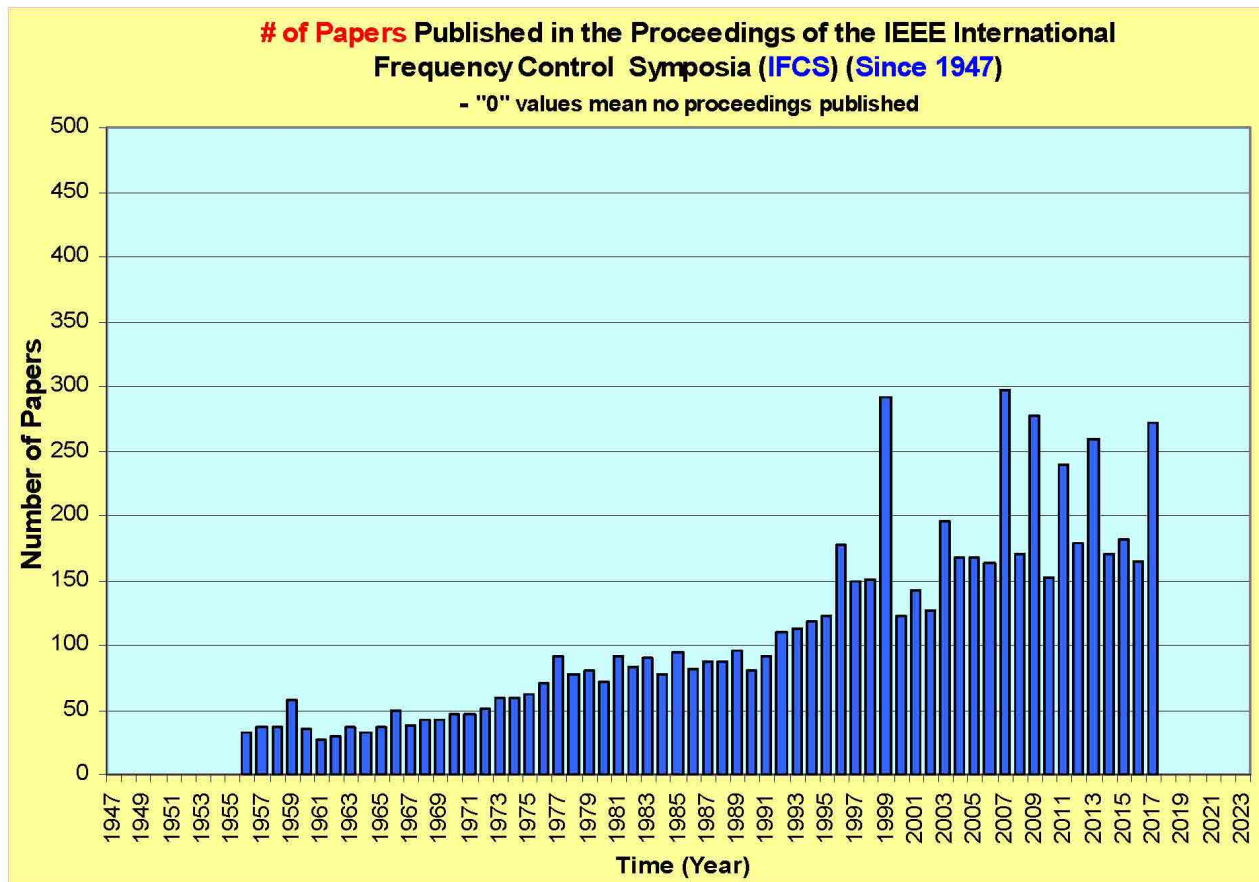
**Figure 10.** Abstracts submitted of IEEE IFCS

The following chart shows the number of papers published in the proceedings ("0" values mean that no proceedings were published in those years) (data were obtained from the published proceedings):



<https://ieee-uffc.org/>

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC-S)



Created: July 6, 2009; Latest Revision: November 29, 2017

By General Chair and Web Master of 2008 IEEE IUS, Beijing, China: Jian-yu Lu, Ph.D.

**Figure 11.** Proceedings papers published of IEEE IFCS

### 17.3.2. A List of IEEE IFCS

A complete list of all IEEE International Frequency Control Symposium (IFCS) since 1947 (including for each symposium: (i) Conference Name; (ii) General Chair; (iii) TPC Chair; (iv) Venue; (v) Location; (vi) Dates; (vii) Sponsor; (viii) Proceedings, and (xi) Websites) can be found in the following file:

**MS Excel Spreadsheet of a complete list of the IEEE IFCS Since 1947:**

[http://ewh.ieee.org/conf/ius\\_2008/z\\_doc\\_misc/0\\_oper\\_ius2008\\_plots\\_ifcs.xls](http://ewh.ieee.org/conf/ius_2008/z_doc_misc/0_oper_ius2008_plots_ifcs.xls)

**Note:** If you need assistance in modifying this Wikipedia page, please contact [Dr. Jian-yu Lu](#).