

July 30, 2008

"History of the Research and New Technology Committee (RANTC)"

Original compilation by Jim Lowes with improvements via RANTCIDS

The Research and New Technology Committee (RANTC) was formed via a merger of the New Technology Committee and the Research Committee in April of 1994. The following is a brief discussion of how this merger came about. I have liberally stolen/copied much of the information in the next few paragraphs from a report written by Dr. Paul Wieber that he submitted to council in late 1994 or early 1995.

Council of the American Institute of Chemical engineers (AIChE) formed the New Technology Committee (NTC) in March of 1984. The mission of the NTC was to find ways to detect emerging new technologies that might employ chemical engineers so that AIChE could provide programming and other services to members. The NTC found difficulty in carrying out its mission. The Executive Board of the National Programming Committee (EBPC) had granted the NTC two sessions at every national meeting, to be used for programming new technologies. This independent programming of new technologies proved less than successful. It was believed that there was no audience for these sessions since most meeting attendees were working in existing technical areas. The NTC also produced the following two reports: "Chemical Engineers: What Skills are Needed?" (1987) and "Project Outreach" (1989?).

AIChE formed the Research Committee (RC) in 1950 to advise the Institute on research matters and to advance the profession through activities related to research. In the early 1990's the Research Committee had many functions including reviewing proposals for the Engineering Foundations to fund previously unfunded professors and interfacing with the Industrial Advisory Board to attempt to make national and annual meeting more relevant to industry.

In 1993 Council informed both the NTC and RC that they were underperforming and that they might look for ways to improve including combining or disbanding. The NTC had begun strategic planning with a goal of completion by November of 1993. During 1993 the NTC and RC worked together to examine differences and overlap between the two committees and their two strategic plans. The result of this work was that Council agreed to merge the two committees and at the April 18, 1994, spring meeting in Atlanta the two committees merged to form the Research and New Technology Committee. There were 35 people from NTC and 40 from RC.

The RANTC mission was to identify, assess and promote new research opportunities and new technologies that will help meet the future needs of AIChE and of the chemical engineering community, and to transmit the resulting information throughout the Institute and to the chemical engineering profession. The intent is to assist the Institute in serving its members and to provide future growth opportunities for chemical engineers and their profession.

The following subcommittees were active at the outset: Programming (led by Dr. Tim Anderson and Dr. Ken Bischoff), database analysis (led by Dr. John Forgac), and lessons learned (led by Dr. Bob Hoch). Three additional subcommittees were envisioned: Government relations, speakers, and new technology integration.

Through the years much of RANTC success can be attributed to the recognition of a need for a committee such as RANTC, which was provided and supported by Dr. Klaus Timmerhaus, initial organization and vision provided by Dr. Paul Wieber, and continued invaluable Institute support provided by Dr. Joe Cramer.

The rest of this history is liberally stolen/copied/reinterpreted from RANTC meeting minutes – the minutes were written by RANTC Chairs/Vice-Chairs/interested helpers, therefore I will not mention their names here – all did a great service to RANTC and AIChE.

1994

Chair: Dr. Paul Wieber

Vice – Chair: Dr. Jack Watson

RANTC membership was a hot topic and it was decided that to be considered a member in good standing a person must attend one RANTC meeting a year and/or be an actively contributing member of a subcommittee.

Programming for the 1996 World Congress was discussed and Dr. Jack Watson took leadership and became the Track Chair for a track titled “Sustainable Chemical Engineering of the Future.”

The Engineering Foundation discontinued its grant program for new professors and thus RANTC would no longer need to rate the grant proposals.

Dr. Steve Drezner gave a presentation at the November meeting concerning critical technologies and their detection.

Dr. Tim Anderson with help from Dr. Klaus Timmerhaus initiated Co-programming with Group 16 at the 1995 Houston meeting concerning cryogenics.

Dr. John Forgac discussed work in progress of the database analysis subcommittee. Some options are: trend monitoring, comparison of patents or papers published to programming.

1995

Chair: Dr. Paul Wieber

Vice – Chair: Dr. Jack Watson

Dr. Lederer gave a presentation at the July meeting concerning “2020 Vision of the Chemical Process Industry.”

The idea of a RANTC steering committee was proposed. The goal of this subcommittee would be to provide policy and business guidance to the full committee, and periodically perform reviews of the committee’s effectiveness. This will be a standing subcommittee and include the Chair, Vice-Chair, Past Chair, RANTC liaison with Council, and two RANTC experienced members appointed by the Chair to two-year alternating terms.

Dr. John Chen reported that Institute finances were a concern and the operating budget was expected to show a loss for the year.

Dr. Earl Beaver gave a brief report concerning the Center for Waste Reduction technology indicating that it is growing steadily and that a second million-dollar challenge on waste was planned shortly.

Dr. Bob Hoch reported that a session on Process Miniaturization is planned for New Orleans.

Dr. Jeff Perl discussed the Air Force Center for Environmental Excellence and noted that the Air Force was extremely interested in technology transfer and site remediation technologies. He asked if RANTC could help. We were able to add sessions to the Chicago meeting to address this issue.

The lessons learned and database committees still had targets to complete their work within a year.

1996

Chair: Dr. Jack Watson
Vice – Chair: Dr. Bob Hoch

Dr. Jack Watson reported that the World Congress of Chemical engineering (held summer of 1996 in San Diego) was successful and the session sponsored by RANTC (sustainable technologies) had standing room only attendance.

The information received from AIChE Council was that they had been focused on the Institute's strategic plan, including long range planning which was appropriate since the budget did not look good.

Dr. John Forgac discussed the progress of the database analysis subcommittee and noted that several different data sets (new patents, papers/presentations at AIChE meeting, etc.) had been investigated. However since this is a volunteer organization and money is limited so is our effectiveness. To remedy that a questionnaire was created that was to be published in AIChEXTRA. The Institute for Scientific Information was contacted and asked to provide a quote for their services by the Spring of 1997.

We discussed RANTC programming plans including: objectives of programming, types of sessions that would be most helpful to identify areas of new technologies for chemical engineers, and topical conferences and how to develop and promote them. We agreed that one of the keys to RANTC programming success is to identify a person who is extremely interested in the new technology area and help that person succeed with the area/idea. This year a couple of our successful topics were miniaturization and computational chemistry in industrial applications.

Dr. Henry Shaw led a discussion concerning the Engineering Foundation and the fact that they would move from the RIG projects to projects with SEED money to support very early topics related to engineering.

1997

Chair: Dr. Jack Watson
Vice – Chair: Dr. Bob Hoch

Dr. Earl Beaver discussed Vision 2020 and noted that the chemical science and engineering priorities for DOE are: Chemical Synthesis, Catalysis, Bioprocesses, Separations, Computational Fluid Dynamics, and Thermochemical Conversion of Waste Polymers. We agreed that RANTC should become involved in Vision 2020 workshop activities.

The AIChEXTRA survey of member's ideas for new programming received ten replies.

The AIChE strategic plan encompassing three committees Chemical Engineering Technology Operating Council (CTOC), Career and Education Operating Council (CEOC), and Societal Impact Operating Council (SIOC) was described and discussed by RANTC.

1998

Chair: Dr. Jack Watson
Vice – Chair: Dr. Bob Hoch

Dr. Phil Westmoreland reported that the RANTC co-sponsored topical "Applying Molecular Modeling and Computational Chemistry" was a success and Dr. Irv Rinard discussed the success of the "Miniaturization" topical. Also, Dr. Joe Cramer mentioned that topical conferences seemed to be raising meeting attendance.

The Government Relations Committee (GRC) informed us about their activities. There ensued some discussion of the proper role of the RANTC in working with the GRC, as it was believed that RANTC could help with ideas and possibly as individuals contacting representatives from their voting districts.

We collaborated on IMRET II. The first time it was held in the United States.

The Council report was that the annual budget might break even.

One potential new programming topic that RANTC wanted to investigate was “Clean Fuels.”

1999

Chair: Dr. Bob Hoch

Vice – Chair: Dr. John Forgac

Dr. Earl Beaver provided an update on Vision 2020 and reported that the Separations Roadmap was available on the DOE website.

Planning for IMRET IV, to be held in Atlanta (2000) with the AIChE meeting, commenced. We expect to add MEMS programming to this conference.

We will sponsor a topical conference on Bioinformatics at the 1999 meeting in Dallas.

Dr. Tim Anderson gave a technical review of Chemical Mechanical Polishing (CMP) and secured RANTC support for programming in the area.

The lessons learned committee submitted a final report. The following action items were proposed and agreed to:

- Maintain a formal list of emerging technology areas,
- Establish technology specific subcommittees to follow each area,
- Expand our role in AIChE programming such as creating a permanent “RANTC seat” on the EBPC,
- Establish linkages to publishing and continuing education, and
- Establish a sub-committee to study and understand timelines in commercialization of new technologies.

Dr. Sang Kim reported that CTOC had been created and was looking forward to working with us.

Dr. Phil Westmoreland reported that the computational chemistry topical at the Miami meeting had gone well and he was looking forward to programming in that area at the RENO meeting. Dr. Kelvin Lee also reported that the bioinformatics tutorial was well attended at this meeting.

Dr. Jack Watson suggested that sustainability needs metrics and volunteered to work, as the RANTC representative, with Dr. Earl Beaver so that CWRT can take the technical lead while RANTC provides support.

Dr. John Forgac reported that The Institute for Scientific Information (ISI) had provided a quotation (\$10,000) to give a bimonthly update tracking technology in several scientific journals. This was recognized as too expensive in light of the Institute’s financial issues.

2000

Chair: Dr. Bob Hoch

Vice – Chair: Dr. John Forgac

The Institute had completed reorganizing and RANTC would now report to the Chemical Technology Operating Council (CTOC).

The Institute lost money in 1999 and efforts to increase advertising revenue in Chemical Engineering Progress were initiated. Throughout the Institute's economic hard times meeting programming was always profitable.

As to RANTC impact on programming: computational chemistry became a forum, bioinformatics will be a topical conference, IMRET IV was heavily attended with a particularly strong contingent of European visitors, and the Air Force/Environmental topical was well attended. Dr. Galen Suppes expects to lead a fuel cell topical in 2001.

There was strong interest in the topic of sustainability but it was unclear what role RANTC could fill while moving this idea to the forefront.

We discussed the lessons learned report and liked the idea of creating "technology subcommittees" to monitor emerging technologies and report to RANTC as needed.

2001

Chair: Dr. John Forgac
Vice – Chair: Mr. Jim Lowes

AIChE recognized Dr. Bob Hoch (past chair) with the George Lappin National Program Committee Service Award.

Dr. Jack Watson announced that RANTC has been identified within AIChE with the following formal role: "To be the centralized point to identify and nurture new technology into the Institute." Also, we have representatives on the Executive Board of the Programming Committee (EBPC) to help assure that "session space" will not limit our efforts. Due to a committee brainstorming session several new programming areas were identified for our committee to get programmed in subsequent national AIChE meetings.

Dr. Gil Lee reported that the "Nanotechnology" topical was successful and should be repeated. Bioinformatics has been adopted by Division 15c.

The Institute did better financially in 2000 than 1999; however, we were not able to secure funding for database analysis.

Executive committee of RANTC was formed (RANTCIDS) to include chair, vice-chair, past chair, Dr. Joe Cramer, and interested previous chairs.

2002

Chair: Dr. John Forgac
Vice – Chair: Mr. Jim Lowes

During this programming year RANTC sponsored or co-sponsored 5 topicals and 44 sessions, including IMRET VI. The "Fuel Cell Technology" topical under the leadership of Dr. Godwin Igwe was a huge success. We also added two new topicals "Sensors" and "Envisioning Biorefineries- Chemical and Materials from Renewable Feedstocks".

EBPC formed a new sub-committee for "Program Outreach". One of the sub-committee's objectives is to improve the transfer of subjects from RANTC to the Institute for a permanent home, as several successful RANTC initiatives have not yet moved to the Institute proper. RANTC members Dr. Bob Hoch and Dr. Kamlesh Bhatia are members of the subcommittee. Discussions were started with the divisions such that RANTC could hand-off IMRET ownership.

As part of their governance role CTOC asked RANTC to meet with them. We presented our history, our organization, operating philosophy, some of our successes, and future goals. CTOC asked RANTC (and we agreed) to provide an ex-officio liaison to their committee.

2003

Chair: Mr. Jim Lowes

Vice – Chair: Dr. Jeff Perl

This appeared to be a very dark year for AIChE finances. The Institutes stand-alone viability was in question.

Dr. Jeff Perl commented on the continuing military interaction program. RANTC championed this program many years ago with interaction between the Air Force and professors and recently the Navy has started to send personnel to our meetings because of this program.

Dr. Jimmy Humphrey informed RANTC that CAST was taking an active interest in the topical “IT in the CPI” and thanked RANTC for initial support and shepherding.

In assessing the Spring and Fall meetings it appears that RANTC should start to focus on technologies to strengthen the Spring meeting.

Membership (or at least the mailing list) in RANTC surpassed 150 people. There was a request for a formalization of our structure and strategy. The discussion became a tension of “do something vs. formalize” and no resolution was reached.

IMRET7 was held in Switzerland and IMRET8 is to be held in Atlanta with RANTC still sponsoring.

2004

Chair: Mr. Jim Lowes

Vice – Chair: Dr. Jeff Perl

During this programming year RANTC sponsored or co-sponsored 10 topicals. These were all repeats of successful, previously sponsored, topicals. We were desperately looking for ways to move sponsorship from RANTC to the divisions. Just ten years prior we were unable to get space for new ideas and now we were unable to find “new” champions for successful ideas.

We also introduced a full day program on pharmaceutical grade water at the Spring meeting.

Institute finances were again a concern but it appeared that the organization would survive intact, albeit smaller.

RANTCIDS had their first relaxed executive meeting over dinner at the annual meeting.

2005

Chair: Dr. Jeff Perl

Vice – Chair: Dr. Sharon Robinson

Dr. Javier Santillan gave a presentation on the Air Forces performance based management restoration/clean-up of air force bases. He noted that they were interested in doing a topical with AIChE. Since funding was very tight for both AIChE and the Air Force it was decided to review this programming opportunity at a later date.

There is a need for RANTC to become involved in energy programming, but we should be a focal point for new energy technologies, and we should hand off quicker than we have historically done with other areas

It appears that AIChE will make money this year. RANTC was asked to help make meeting programming even more interesting so that more members would attend the meetings.

June Wispelway, Executive Director of the Society for Biological Engineering (SBE), discussed an exciting consortium that SBE is getting off the ground with major pharmaceutical companies and the University of Minnesota and the Bioprocessing Institute of Singapore to complete the genetic structure of Chinese Hamster Ovary (CHO).

Mr. Bond Calloway gave us an overview of the Nuclear Energy division. We thought RANTC might engage this area by offering co-sponsorship to their programming.

The Spring meeting is going to a track format and we must keep this in mind as RANTC seeks to build the Spring meeting.

2006

Chair: Dr. Jeff Perl

Vice – Chair: Dr. Sharon Robinson

Financially things are looking up for AIChE as the Institute had positive cash flow in 2005 and expects the same this year. One issue that needs to be addressed is the slow leakage of membership.

RANTC co-sponsored a “Hydrogen” topical consisting of 8 sessions and attendance was high.

The Institute President Dr. John Chen visited the meeting and gave this view: “He asked RANTC to stay abreast of teams’ activities and concentrate our programming on breakthrough technologies to support these areas, particularly energy where the problem is huge.”

The Sustainability Forum has adopted Envisioning Biorefineries- Chemical and Materials from Renewable Feedstocks” thus the topical is now an official RANTC success.

Mr. Bond Calloway agreed to become the RANTC Energy Steward and he will perform a gap analysis to determine if there are additional areas where AIChE and RANTC can be programming

Dr. Marco Castaldi agreed to become RANTC Sustainability/Green Steward.

RANTC is also looking for volunteers to become knowledge stewards in other areas.

As always we looked for new ideas.

In Spring 2008 AIChE will do some joint programming with ACS. RANTC should be considering helping with the ACS programming at the Spring Retreat.

2007

Chair: Dr. Sharon Robinson

Vice – Chair: Mr. Bond Calloway

RANTC now has a web page =www.aiche.org/RANTC

Dr. Marco Castaldi and Mr. Bond Calloway gave presentations concerning Green and Energy Steward Activities. An energy survey was performed for the Annual meeting. Approximately, 4500 people responded to the survey since the survey was loaded into Confex, which is the conference-planning tool that AIChE uses. Energy related papers exceeded 26% of the total papers presented.

The Institute President Dr. Dale Keairns asked RANTC: What strategy should the Institute pursue to better coordinate energy?

RANTC became more of a working group at the Fall meeting and addressed two main areas. In the first working session the committee addressed the following:

Group I -- Should AIChE Consider Institutionalizing Energy? Perhaps as a technical Society or Should AIChE Energy Programming continue as is or some hybrid structure;

The working group recommended yes, but in a way that doesn't stifle the current programming efforts. Along with expansion of the "Energy Steward" concept there were several other recommendations concerning the institutionalization of energy.

Group II – Should RANTC continue to play a role in highlighting Energy programming? Or should this role be incorporated into existing efforts?

A few of the Group II recommendations:

- 1) Improve analysis of energy programming gaps – Automate Energy Survey analysis
- 2) Consider adding a forum (RANTC's mission) for advanced research topics that don't fit into current programming
- 3) Since energy topics cross cut all divisions and forums, add virtual topical to programming book to highlight programming threads

Both Groups I and II concluded that RANTC should continue to identify gaps and continue developing energy metrics via the "Energy Steward" concept

The second working session broke down into two groups to address the following:

Group A – Define RANTC' Future Objectives for 2008/09?

Proposed objectives for 2008/2009

- Address New Research/Technology focus areas that will increase the Institute's programming or membership
- Address what the Institute should be doing toward new research/technology programming or other relevant topics as suggested by board or President.
- Increase membership in RANTC through PR and by attracting members from all divisions and forums

Group B – List New Technology Topics and Two Champions for RANTC to Pursue

A Fusion Energy topical. The topical was planned and programmed for the Fall 2008 meeting.

Possible new Technology Topics for RANTC to Pursue

- Toxicology Modeling
- Hydrogen Storage
- International Fusion Project (ITER)
- Solar Topical

- Waste to Energy

AIChE is ok financially at this time and finances should become less of a worry to RANTC.

We also looked for additional programming ideas for the future.

2008

Chair: Dr. Sharon Robinson

Vice – Chair: Mr. Bond Calloway

Mr. Bond Calloway published the Energy survey in the March 2008 Chemical Engineering Progress. He also wrote portions of an AICHE Centennial Book chapter on Energy with Dr. Dale Keairns and Dr. John Chen that will be published later in 2008.

The Spring 2008 meeting was again structured as a working meeting with one focused presentation on a new technology topic. Dr. John Plodinec, Savannah River National Laboratory gave a presentation on Adapting to Climate Change. A working session was held to brainstorm this topic and develop champions for this challenging area. Adapting to climate change addresses the R&D that will be needed to deal with the impacts of climate change if mitigating the source of CO₂ cannot be accomplished in a timely fashion.

Mr. Bond Calloway developed a rolling slide presentation, flyer and poster for a booth at the Annual 2008 meeting. The promotional materials were reviewed in a working session at the Spring meeting led by Dr. Sharon Robinson and finalized in July.

The energy survey was loaded into confex for the Spring 2009 meeting and updated to include additional questions. AICHE staff has agreed to develop Virtual Topicals on energy with RANTC based upon the survey results for the Annual 2008 meeting. The Virtual Topicals will be program listings of key technical areas identified by RANTC (e.g. solar, oil shale, carbon sequestration). The program listed will be a PDF file located and highlighted on the conference web site.

Some additional information about RANTC

Current RANTCIDS

Mr. Bond Calloway

Dr. Marco Castaldi

Dr. Joe Cramer

Dr. John Forgac

Dr. Bob Hoch

Mr. Jim Lowes

Dr. Jeff Perl

Dr. Sharon Robinson

Dr. Jack Watson

Vision:

RANTC is the entity in AIChE that quickly succeeds or fails in identifying, nurturing, and deploying professionally relevant technologies that strengthen AIChE by attracting and retaining practicing professionals involved in those technologies.

RANTC Programs as Group 18j

A few of the Topicals and Sessions sponsored by RANTC over the past ten years:

Microreactions/IMRET
Bioinformatics
Air Force/Military Interaction Program
Computational Chemistry
Sustainability/Life Cycle
Sensors Topical
Information Technology in Chemical Engineering Topical
Process Intensification and Microreactions Topical
Electrodeposition of CU for Microelectronics Topical
Molecular Computing Topical
Modeling of crystallization processes
Incorporating New Technologies into ChemE Education
Commercializing New ChemE Enterprise Topical
Virtual experiments
Polyfunctional Ligands for high reaction and separation Electronic Materials
Bio-microelectronics
Bioseparations
Mammalian Cells and Scale Up
Endocrine Disruptors
Nanotechnology
Secure Plant Design and Operation
Financing New Ventures
Pharmaceutical Water
Green Chemical Engineering Topical