

December 2013 Amelia Earhart Fellow Profile

Ivana Milanovic

In honor of the 75th Anniversary of the Amelia Earhart Fellowship this year, we will be profiling an Amelia Earhart Fellow in each issue of the e-Newsletter to illustrate the impact of the Fellowship on the Fellows themselves and on their fields of study.

This month, we feature former Amelia Earhart Fellow **Ivana Milanovic**. Ivana answered the following questions to give us more insight on her life, her work, the benefits of the AE Fellowship and her Zonta International membership



What year did you receive the AE Fellowship?

I received the AE Fellowship in 1998-99 for my work in the area of supersonic vortical flows. There were 35 awards given in 1998-99 from 17 different countries. At the time, I was citizen of Yugoslavia.

What do you do in your professional life?

I am a professor of mechanical engineering teaching in engineering programs at the graduate and undergraduate levels. My area of expertise is thermo-fluids with research interests in vortical flows, computational fluid dynamics, multiphysics modeling, and collaborative learning strategies. I am a contributing author for more than 70 journal articles, NASA reports, conference papers and software releases. Since joining the University of Hartford, I have been awarded or participated in a number of grants totaling approximately \$2.75 million. I am active on American Society of Mechanical Engineering (ASME) Fluid Mechanics Technical Committee co-organizing symposia and reviewing papers. My honors include five NASA Faculty Fellowship Awards, Award for Innovations in Teaching and Learning, and Outstanding Teacher Award of the University of Hartford.



What are you most proud of?

Personally, of my life.

Professionally, of having fulfilling career that is continuously evolving. I have started as an HVAC engineer; continued as faculty at the University of Belgrade, working on theoretical fluid mechanics; obtained Ph.D. from NYU-Poly investigating supersonic flow over delta wings experimentally, and for this research I am proud recipient of AE Fellowship. I am currently a professor of Mechanical Engineering at the University of Hartford, studying low-speed vortical flows and their effects in the turbomachinery using both experiments and computational simulations.

What was the most exciting thing that you did?

For each stage of my career there is at least one exciting thing:

1. My first business trip, as an HVAC engineer, was to Macedonia and Greece where I explored development of 'total power system' with the geothermal water as the basic energy source.
2. I had great fortune to be able to perform experimental research in the supersonic flow regime for my Ph.D and to couple it with computational calibration of multi-hole probe on a Cray-C90 supercomputer at Pittsburgh Supercomputing Center (PSC).
3. In the very first year of my tenure-track at the University of Hartford, I have won NASA Faculty Fellowship Award that has greatly helped me transition from the supersonic to low-speed research.
4. I have visited Islamic Republic of Afghanistan to help strengthen the engineering program at Heart University. Subsequently, the University of Hartford was awarded a \$1.3 million grant from World Bank that enabled faculty members from Herat University to come to the University of Hartford to pursue degrees in civil and mechanical engineering.
5. I am currently building Turbomachinery lab at the University of Hartford with the help of generous donation from United Technologies Research Center and my wonderful colleagues, Dr. Bill Cousins and Dr. Om Sharma.

How did the AE Fellowship help you with your career?

The fellowship opened my mind as well as many doors that I even did not know existed. I was introduced to a number of wonderful professional women from various fields with whom I still keep in touch. As an Amelia Earhart fellow, I have been a keynote speaker on the subject of Women in Science and Engineering throughout the tri-state area. Through interactions during the aforementioned events, I have become increasingly aware of the need to reach out to women and facilitate their active participation in the engineering community. I strongly believe that continuous and coordinated efforts of engineering professionals and their organizations would elevate the current status of minorities and women. Finally, I was invited to join the Zonta club of Suffolk County, where I was elected the Chairperson of the Amelia Earhart Committee and organized the Amelia Earhart Celebration 2000 featuring among others: Dr. Patricia Hilliard Robertson, NASA Astronaut, Mission Specialist, and Mae Elaine Smith, the Governor of the NY/NJ Section of 99's. The Celebration was geared towards introducing mothers and daughters to the aerospace engineering profession and provided a tour of local Republic Airport facility and free access to the flyer simulators. The Amelia Earhart Fellowship was much more than money, although it did not hurt in the lean Ph.D. years, it was about getting to know so many amazing women and doing something that makes you feel good at the end of the day.

What challenges do you encounter in your career?

Challenges are many, both internal and external. I had to overcome my fear of change and failure in order to fully embrace the opportunities that have been presented to me. Interestingly, external obstacles had motivational effect. The bigger the obstacle, the harder I worked towards my goal.

Are you seeing more women in your field now?

Recent national data on gender equity in STEM professions (NSF, 2012 and NSF Division of Science Resources Statistics, 2011) indicate that women's participation in science and engineering is about half of what it is in the workforce as a whole. Current ratio of women's to men's earnings is at historical high of 82.2 percent; however, if the pace of change continued at the same rate as it has since 1960, it will take until 2056, for men and women to reach parity (Hagewisch, Williams, & Zhang, 2012). That may be the reason I am seeing just a few women in my upper level engineering courses.

You joined Zonta in 1999 and just recently rejoined Zonta? Who or what inspired you to become a member?

Prof. Marilyn J. Bartlett, President of Zonta Club of Suffolk County Area strongly encouraged me to become a member in 1999. Within a month of joining the Zonta club of Suffolk County, I was elected the Chairperson of the Amelia Earhart Celebration Committee 2000. I was absolutely petrified of what I considered an enormous undertaking for a person without a network at the beginning of her professional career. However, my fellow Zontians had a great confidence in me and I had some wonderful friends in aerospace community; consequently, ours was the first Celebration to feature NASA Astronaut and it had a great media exposure. Dr. Sharon Lagenbeck, Zonta International AE Fellowship Program Chair recruited me as a member of the North American Zonta E-club last spring, and I am very thankful for that. With the promotion and tenure track behind, I devote more time and energy to Zonta-related activities.

Have you held any club position in your Zonta Club? If so, what position? Tell us a little about this experience.

Chairperson of the Amelia Earhart Celebration Committee 2000, see above.

Who do you most admire, personally and/or professionally, and why?

I admire my grandmother for surviving First and Second Balkan war, First and Second World Wars, life in communist country, Yugoslav wars, and still be able to love, support and encourage me to dream among other things.

Professionally, I admire Dr. Khairul Zaman, a most remarkable and unpretentious scientist of established achievement who has been making noteworthy contributions in the field of fluid dynamics for more than 30 years. As a little kid growing up in Bengal, Khairul wanted to work for NASA, and he made his dream come true. Dr. Zaman's research on vortex generators led to the 'chevron' technology employed in modern jet engines. His outstanding findings also include discovery and explanation of 'transonic tones' in overexpanded jets and a low frequency oscillations around airfoils near stall condition.

Personally and professionally, I admire Dr. Frank Y Wang, aerospace engineer at DoT, who has been my colleague from NYU-Poly. He had sent me a Zonta poster advertising the AE fellowship from Belgium. Frank had encouraged me to apply for the fellowship, and spent quite a lot of time persuading me that I can do it. His work on flow visualizations and airplane wakes is an inspiration to me.

What is your favorite book and why?

The Bridge on Drina, by Nobel laureate Ivo Andric. It is my favorite gift to my friends, providing a wonderful glimpse into the history (the late 16th century to the beginning of WWI) of the region where I came from.

If you hosted a dinner party for eight, who (leaving or deceased) would you invite?

This is easy:

Amelia Earhart for apparent reasons

Marie Curie for apparent reasons

Dr. Khairul Zaman, Aerospace Engineer, NASA GRC, whose research on vortex generators led to the 'chevron' technology employed in modern jet engines

Dr. Frank Y. Wang, Aerospace Engineer at DoT, whose work on flow visualizations airplane wakes is an inspiration to me

Dr. Bill Cousins, Principal Research Engineer at UTRC, who has encouraged me to get out of my comfort zone and hope for the best no matter what

Dr. Om Sharma, Senior Fellow at UTRC, whose thoughtful guidance is greatly appreciated

Dr. Tom Eppes, professor of Electrical Engineering at University of Hartford, whose vision was invaluable in developing our scholarships of application, integration, and teaching.

Dr. Khaled J. Hammad, professor of Engineering at CCSU, flow measurement expert