



Remembrance of Zvi Rusak

By John Tichy

My friend and colleague Zvi Rusak, was professor of mechanical, aerospace and nuclear engineering at Rensselaer. He had been a member of the Rensselaer faculty since 1991. Professor Rusak received three degrees from the Technion-Israel Institute of Technology, in Haifa, Israel: earning a BS (1980), MS (1982) and a doctorate in 1989. He worked as an aeronautical engineer at the Israeli Air Force (1982 - 1988), where he headed the Aeroelasticity group (1987 – 1988).

Professor Rusak was a stalwart in the field of theoretical and computational aerodynamics and fluid mechanics. His research has helped illuminate the vortex breakdown phenomenon, which occurs in vortex flows above airplanes and in swirling flows in pipes and nozzles of engines. He derived a cohesive theory that explains the nature of the breakdown process in these swirling flows.

Professor Rusak published more than 250 papers and has made significant contributions to the understanding of fluid dynamics. His research applies to both aeronautical and mechanical engineering systems, including the design of aircraft wings, helicopter blades, wind and hydroelectric turbines, and combustors. Professor Rusak's publications include more than 80 archival journal papers, including many in the premier journals of the field. He is currently ranked among the top 130 scientists in the world by the prestigious *Journal of Fluid Mechanics* in terms of the number of papers published. Zvi has received multiple honors and recognitions. He is a Fellow of the American Physical Society, the American Society of Mechanical Engineers, and an Associate Fellow of the AIAA.

Professor Rusak was not only a respected researcher but also a passionate teacher. His aero students loved the fact that they could see his theoretical brilliance first hand. However, in addition, he had vast practical experience having served in the Israeli Air Force, and was even a skilled pilot. He was a treasure trove of wisdom on all things aero. His love for teaching is reflected in comments by his students, e.g., "Professor Rusak will be one of the few professors that I will remember for the rest of my life. Thank you for four great years." "Prof Rusak's passion for teaching is infectious." "Dr. Rusak is very passionate about what he teaches, which comes through in his lectures." And on and on.

On a personal note, I worked with him on research projects and we co-authored several papers. These were deeply rewarding but humbling experiences for me. His mind was racing ahead before I had even put down my coffee. It was almost frightening to be in the presence of such pure brain power. Zvi was extremely proud of the accomplishments of his wife and children from whom he garnered insights about the workings of the modern world. On a nonacademic note, with his prestigious resume, he would be the last person one would have expected to see at local lowbrow rock 'n' roll shows. But nevertheless, with his wife, often there he was.

A truly remarkable man who is deeply missed.