

### Dmitry Davidenko Scramjet Czar

From Moscow to the French city of Orléans: that's the direct, if somewhat unusual, route taken by Dmitry Davidenko. At 43, he is now a specialist in so-called scramjet engines, which will one day enable planes to fly much faster, at Mach 5—five times the speed of sound. This Russian engineer is still surprised to have ended up in France for his PhD—a project he undertook at an age when most had long finished their studies.

Indeed, Davidenko only started his doctoral research six years ago, under the supervision of Iskender Gökalp at CNRS' LCSR<sup>1</sup> in Orléans—renamed this year ICARE.<sup>2</sup> There, he was able to develop numerical simulation tools for the supersonic combustion of methane and hydrogen, (in the framework of the French LEA program)<sup>3</sup> and won the 2006 EADS prize—awarded for technologically and conceptually innovative PhD research. This was great recognition for a man who dreams of seeing planes fly at more than eight times the speed of sound (twice the current ramjet limit of Mach 4).

His career has also been on the fast track. Back in 1981, Davidenko had just entered the Moscow Aviation Institute (MAI) as a student when one of his professors offered him a part-time job as an apprentice engineer in his lab. That was the start of three years of intensive training on the internal processes of the combustion chambers of tomorrow's planes. "That was an extremely fruitful and enlightening period of my life, and by the time we received our diploma, we were already skilled engineers." The MAI took notice and kept him on, first as a design engineer, then as a research engineer. At the time, no one could foresee the consequences of Perestroika, until the 1990s, which ushered in a severe economic crisis. "It meant losing nearly all our contracts with the Ministry of Defense and the aviation industry," Davidenko recalls. Faced with a pay freeze and seeing their work come to a standstill, many of his colleagues decided to leave the institute. But Davidenko placed his bets on the lifting of border restrictions, and it paid off. In 1992, his team signed their first

contract with "Aérospatiale missiles," today known as MBDA France. The aim was to increase the speed range of scramjets, engines highly efficient at hypersonic speeds, but which first need to be propelled by another engine. For the first time, Davidenko spent six months in France in 1993.

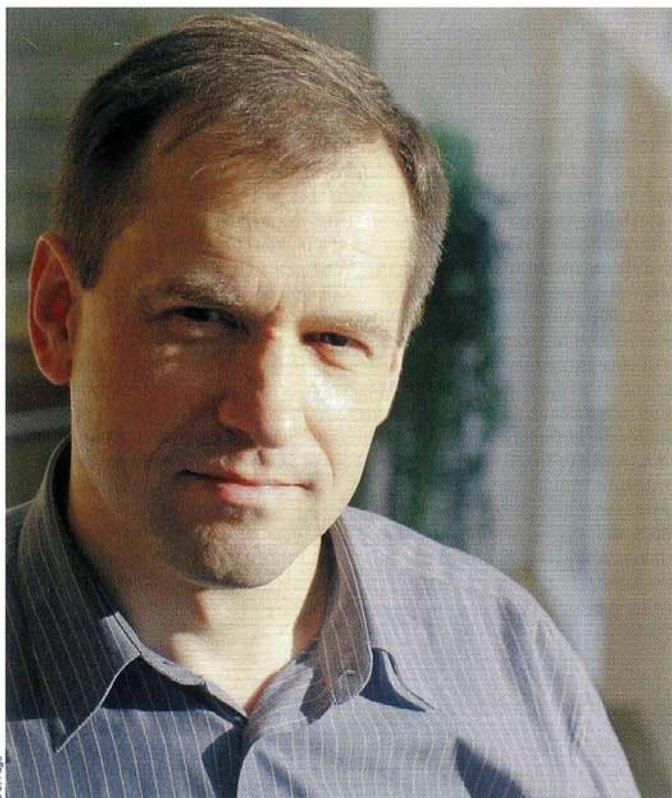
Back in Moscow, the high cost of living led him to consider swapping his job for a better paying one. By a stroke of luck, he was offered to undertake a PhD as part of the cooperation between MBDA France, Onera, and LCSR. This time, Davidenko moved to France permanently, to the lab in Orléans where he still works today. Although he recalls his anxiety at leaving behind a life that was "rather modest but had a minimum income guaranteed," he has no regrets. Completely taken up with his work on numerical simulation codes and his supervision of a PhD student, he appreciates the freedom that researchers enjoy. Of course, Davidenko would love to have enough time to take better advantage of Orléans' pleasant lifestyle. But there's much to accomplish today, at a time when the future of aviation is more promising than ever. The computational and experimental approaches are now so closely linked that he spends most of his time validating numerical codes by ground tests results. As Davidenko puts it, "I get great satisfaction from the fact that my knowledge and the work I have contributed can actually find applications. Otherwise, what would come of all this time spent?"

Patricia Chairopoulos

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#### AWARDS

### Humboldt Research Award

Marie-Louise Saboungi has been elected the recipient of a Humboldt Research Award in recognition of her lifetime achievements in research. Director of CRMD,<sup>1</sup> and physics professor at the University of Orléans, Saboungi is particularly involved in research on carbon nanotube-polymer composites. Award winners are invited to spend a period of up to one year cooperating on a long-term research project with specialist colleagues in Germany.

1. Centre de recherche sur la matière divisée (CNRS / Université d'Orléans).

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