Ernest Solvay's spirit in the MBA Program

Meet Dr. Vikas Rana, a Solvay MBA alumnus and head of Technology Group at Peter Grünberg Institute-7, one of the largest multi-disciplinary R &D organizations in Europe

About Dr. Vikas Rana

Dr. Vikas Rana was born and raised in Northern India. After his studies at the Indian Institute of Technology Delhi, one of the premier institutes in India, he came to Europe in 2002 to pursue his PhD in semiconductor technology from Delft university of Technology, Netherlands. He worked at Philips semiconductor, Nijmegen as a Failure Analysis Engineer and at the Indian Institute of Technology, Delhi as Assistant Professor. From 2011, he has been heading a technology development group at Forschungzentrum, Germany. His main research interests include emerging non-volatile memory devices such as metal-oxide and integration with the contemporary CMOS technology. He is the author and co-author of more than 50 technical papers, published in international journals and conferences.

Currently, Dr. Rana serves as head of Technology Group at Peter Grünberg Institute-7 in Forschungzentrum Jülich GmbH, one of the largest multi-disciplinary R&D organizations in Europe. His current focus is developing the next generation of non-volatile memory devices. After completion of the EMBA at Solvay, he also plans to launch a social-food startup in Brussels. Passionate cooks - professional or amateur - can list their food and invite eaters to buy a seat at their table during the meal. The goal is to lower the entry barrier for cooks to the marketplace and offer a unique social experience to eaters at a lower cost.

"Vikas' technological and managerial skills are symptomatic of the School's strategic positioning since its creation by Ernest Solvay in 1903: being at the intersection of Economics, Technology and Management."

– Bruno van Pottelsberge, Dean of the Solvay Brussels School - ULB

Interview

What is your feedback on the Solvay MBA Program?

This program offers high-level insight into modern leadership and management strategy. For me, it was a transformative experience, professionally and personally.

Having gained the knowledge of frontend and backend business operations, it is time to use them in the real world. During the Entrepreneur Lab work and IBFP project (International Business Field Project), I was professionally able to do this. I am now launching a social food start up with my MBA classmate **Liesbeth Mattheus**. This is a great opportunity to test the learning of the MBA program**. Solvay provides a platform and resources for new entrepreneurs**.

A tight schedule and a high workload forced me to stretch beyond what I imagined was accomplishable. Great team-work activities performed with smart MBA colleagues are an example of resilience and cooperation. Overall, after the MBA, I become more focused, a better listener and a more empathetic person.

Coming from Germany and staying in Brussels during long weekends was both challenging and exciting. Challenging, because of the intense workload of MBA classes while working a full-time job, and trying to manage the family staying in Germany. My two year old son, Aryavart, missed me during the long MBA weekends. Exciting, because of the smart and compassionate colleagues whom I met at Solvay.

any advice for those who want to start an MBA?

The MBA program provides dimensional views of any problem during the class discussion. On one hand it is highly important to be focused; whereas, on the other hand, it is important not to lose the larger view of the problem. Having strong listening skills helps one to be on the right track. This journey is wonderful if one has the buy-in of family, friends and employer before it begins.

You recently appeared in an article in *the Economist* newspaper about Electronics ("A memory chip that can compute"). Can you tell us more about this?

Today's computer, based on von Neumann architecture, simply consists of a processing unit containing an arithmetic logic unit and a memory to store both data and instructions. The information exchange between the memory unit and processing unit is performed through data-bus-lines, which costs high power and longer time to perform the instruction. My team at Forschungszentrum Jülich GmbH has developed a way by which the function of the processing unit and the memory unit can be performed within the memory devices. This avoids unwanted delay due to exchange between processing units and memory unit, and reduces the power consumption. These memory chips, known as RRAMs are made of tiny crossbars of metal-oxide semiconductors instead of today's transistors. As a result of voltage-stimulus, a change in resistance state occurs that is caused by the movement of oxygen vacancies within its crystal lattice. As of now, these dual-action ReRAM chips might not compete with the fastest processors but at least they can comfortably switch in range of sub Giga-Hertz frequencies with as many as eight resistance levels (ie, 000, 001, 010, 011, 101, 111, 110 and 100). A conventional chip would need three transistors to do this. In *Scientific Reports Journal*, I describe a successful demonstration of a ternary (base three) numbering system with modular arithmetic, which is more efficiently executed when done with higher-base numbers. Low power consumption and a high level of computation makes these devices attractive for products like sensors, wearable gadgets and medical items.

Read the full article in The Economist here.