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Technology Review magazine names Rustem Ismagilov one of world's top young innovators, his third recognition in one month

Rustem Ismagilov, Assistant Professor in Chemistry at the University of Chicago, has been named to the 2004 list of the world's 100 Top Young Innovators by *Technology Review*, MIT's Magazine of Innovation. The recognition is the third that Ismagilov has received in less than a month. On Sept. 9 he received a Presidential Early Career Award for Scientists and Engineers at the White House. And on Aug. 23 the American Chemical Society named him a recipient of its 2005 Arthur C. Cope Scholar Award.

The TR100, chosen by the editors of *Technology Review* and an elite panel of judges, consists of 100 individuals under age 35 whose innovative work in technology has a profound impact on today's world. This year's nominees are recognized for their contributions in transforming the nature of technology and business in industries such as biotechnology and medicine, computing, and nanotechnology.

The Presidential Early Career Awards for Scientists and Engineers honor the most promising young researchers in the nation within their fields. Eight federal departments and agencies join annually to nominate young scientists for the awards. Ismagilov's nominating agency was the Office of Naval Research. The Cope Award is given to recognize and encourage excellence in organic chemistry. The award consists of \$5,000 and a \$40,000 unrestricted research grant.

Ismagilov specializes in understanding and controlling complex chemical and biological systems at critical times and locations using microfluidics, the flow of fluids through channels thinner than a human hair. Working with University of Chicago graduate students Helen Song and Cory Gerdt and undergraduates Joshua Tice and Michelle Bringer, Ismagilov has demonstrated how to introduce chaotic mixing inside droplets flowing through microfluidic channels. Chaotic mixing allows researchers to precisely control the timing of chemical reactions in studying the dynamics of complex reaction networks.

An example of such a reaction network is hemostasis, the body's system for maintaining blood flow. In a paper published earlier this year with University of Chicago graduate student Matt Runyon and undergraduate Bethany Johnson-Kerner, Ismagilov showed how microfluidics can be used to simulate blood-clotting. The system could potentially lead to medical applications. Ismagilov sees it mainly as a system that could help researchers better understand and control other biochemical reaction networks, such as the development of an organism from a single cell, under investigation by Elena Lucchetta in Ismagilov's laboratory.

In another innovation, Ismagilov and two other members of his group, Bo Zheng and Spencer Roach, developed a microfluidic method for crystallizing proteins. This new technology enables researchers to conduct hundreds of finely calibrated protein crystallization tests—a key component in drug development—rapidly but with minimal expenditure of manual labor and consumption of sample fluids.

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Technology Review began its annual selection of the world's top innovators under the age of 35 five years ago.

“This year's winners are all pioneering fascinating innovations in the fields of biomedicine, computing and nanotechnology, and were chosen after a rigorous selection and judging process. The result is an elite group whose visions and inventions will shape the future of technology,” said David Rotman, executive editor of *Technology Review*.

Ismagilov will be honored Sept. 29 and Sept. 30 at *Technology Review*'s Emerging Technologies Conference at MIT. The event features keynotes, panels and breakout discussions on the transformative technological innovations that have the potential to fuel new economic growth and dramatically change the future. For more information about the conference, see <http://www.tretec.com>.

Technology Review Inc., an MIT Enterprise, delivers essential information about emerging technologies and their impact on business leaders. Since 1998, paid circulation for the company's magazine, *Technology Review*, has more than tripled, climbing from 92,000 to 315,000. Combined with its events, newsletters and online businesses, *Technology Review* reaches more than two million business leaders throughout the world each month.

<http://www-news.uchicago.edu/releases/04/040920.ismagilov.shtml>
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