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World's fastest bipolar transistor earns research excellence medal

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Doctoral research leading to the world's fastest bipolar transistor has earned recent Simon Fraser University PhD engineering science graduate Martin Dvorak the Douglas R. Colton Medal for Research Excellence. The new cooler-running DHBT (double heterojunction bipolar transistor) could play a key role in future semiconductor electronics applications, particularly new fibre-optic and wireless telecommunications technologies, says professor Colombo Bolognesi, who initiated the DHBT project. "We developed three generations of transistors through a grant from NSERC (Natural Sciences and Engineering Research Council) and Martin worked on all of them - but this last one was all his," says Bolognesi, director of SFU's Compound Semiconductor Device Laboratory where Dvorak did his research. He was also Dvorak's advisor for his engineering science masters and PhD theses. "Martin developed some process improvements that allow the fabrication of very small-area devices that ended up being very fast." "As a grad student, you don't normally expect you'll be doing anything that's actually useful - especially for the long term," chuckles Dvorak. Dvorak and his young family are now based in Santa Rosa, Calif., where he works at scientific equipment maker Agilent Technologies' micro technology centre, developing custom integrated circuits for high-frequency test equipment applications. The annual Colton Medal recognizes outstanding research and development in microelectronics or related technologies by faculty, students or alumni who have successfully completed a master's or PhD degree in any Canadian university within the previous three calendar years. Queen's University-based Canadian Microelectronics Corp. of Kingston, Ont., sponsors the award, which includes \$3,500 cash.