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Vanier College physics teacher awarded photonics research grant

Montreal, April 27, 2011. Faster is not necessarily better if it's an internet signal that is too fast to be monitored and corrected before it reaches its destination. But Rhys Adams, Honours Science Coordinator and member of the Vanier College Physics Department, will be looking for a solution to such problems thanks to a three-year research grant he was recently awarded from FQRNT (Fonds de recherche sur la nature et les technologies) as part of their "Programme de recherche pour les enseignants de collège."

The grant allows Rhys Adams to conduct research in the field of photonics, an area of science that looks at the interaction of light and electronics, in collaboration with professors at McGill University. Rhys Adams' research focuses on the processing of optical signals for high-speed data transmission such as internet connections. As advances in technology increase the speed of the optical transmission of data, the capacity of monitoring the quality of that transmission is in jeopardy since current monitoring is done electronically. In the future electronic techniques may become obsolete since they will likely be too slow to monitor the quality of high speed optical signals. Rhys will study new and innovative ways to monitor the data all-optically.



If a transmission signal is not clean, information gets lost. This means an email goes to the wrong destination or goes nowhere at all, or a website does not open properly and takes a while to refresh itself. Both these situations indicate there are errors in the data signal. So Rhys is looking for an optical way of doing the monitoring – a live integrated diagnostic tool that will detect errors and send a command to correct them. The future implications of his research could mean that internet signals are fast and clean.

The experimental research will be performed at McGill University with the Photonic Systems Group that is part of the Electrical Engineering department. The research group has world-class, state-of-the-art facilities including bits error rate testers worth over \$10 million, and occupies 4,500 square feet of office and laboratory space.

The research grant will also benefit Vanier College students. Funds have been allocated to bring the Vanier College Honours Science class to the Photonic Systems laboratories to perform experiments relevant to the content of their Cegep Waves and Modern Physics course and use sophisticated equipment as lasers and high-speed optical equipment. Furthermore, each year, Rhys Adams will provide a two-week paid research activity for one or two Vanier Honours Science students to assist him in conducting experiments, thus providing opportunities to students that cannot be matched by other colleges.