

# VANIER

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## NEWS RELEASE

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### **Vanier College's Rhys Adams receives a \$96,000 FRQNT grant to study the use of silicon nitride for high speed communications**

Montreal, October 10, 2017. Photonics, which is the use of light to perform functions similar to those of electronics, has transformed the quality of our daily lives in ways unimaginable decades ago. For example, it has had a huge impact on communication systems and networks, which have stimulated economic prosperity for business, healthcare, education, and entertainment sectors.

Vanier College is proud to announce that Physics teacher Rhys Adams, whose previous photonics research demonstrated that tiny silicon waveguides can be used for optical signal processing, was recently awarded a three-year grant of \$32,000 a year from the Fonds de Recherche Nature et Technologies Québec (FRQNT) to investigate the use of silicon nitride for the same use. Silicon nitride has the potential to be even more broadband than just silicon and could also be used for new optical sensing devices in the infrared spectrum. The goal of this research is to demonstrate the use of silicon nitride in achieving nonlinear optical effects that enable advanced optical signal processing functionalities for microwave photonic systems (using photonic components to process cell phone and wi-fi signals) and high data rate optical communication systems (e.g. broadband internet).



Why should we care? "Well, as data rates keep increasing, typical electronics that process the data cannot keep up," says Rhys Adams. "So we need to have optical solutions, but by doing so, we end up with bulky devices (e.g. routers and data centers take up a lot of space!). Furthermore, having some electronics may still be desirable and using a known manufacturing technology will help keep costs down. So by using silicon, we have an approach that integrates the optics into a chip that is compatible with CMOS electronics (e.g. computer chips), we achieve small size (before, the nonlinear effects that we needed used to require several kilometers of fiber; now we have tiny waveguides of a few millimetres) and can keep costs low."

Rhys Adams' work is done in collaboration with McGill University and with Chalmers University of Technology in Gothenburg, Sweden. Students in Rhys' Waves and Modern Physics course will be able to follow his photonics research in class and will be invited to visit the McGill University laboratories. Funds are set aside to allow college students the opportunity to join Rhys at McGill for a paid summer research internship.

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