

## Vita

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Universities  
Attended: University of New Brunswick (2018)  
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### Conference Presentations:

“Cost Effective Alternative: The Synthesis of (5S, 7S)-conophthorin.”  
Graham Atwood and David I. MaGee. Naturally-derived Semiochemicals for  
Insect Pest Management. Virtual Presentation. October 29, 2020.

# Cost Efficient, Scalable Asymmetric Synthesis of Bronze Birch Borer Kairomone (5S,7S)-7-Methyl-1,6- dioxaspiro[4.5]decane

UNIVERSITY OF NEW BRUNSWICK  
THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment

of the Requirement for the Degree of  
Master of Science

by

**Graham A. Atwood**

in the Department of Chemistry

U.N.B., Fredericton, N.B.

**Thursday, August 26<sup>th</sup>, 2021  
10:00 a.m.**

Via MS TEAMS

Examining Committee

Dr. David MaGee	Supervisor
Dr. Ghislain Deslongchamps	Internal Examiner
Dr. Charles Sacobie	Int-Ext Examiner
Dr. Gilles Villemure	Chair of Oral Examination

## Abstract

With the increased use of birch trees, specifically non-native birches in parks, and beautification projects, an increase of infestations by the bronze birch borer (*Agrilus anxius*) has occurred. While reactive measures are available to try to remediate infested trees, a proactive strategy is not as widely available. (5S,7S)-7-Methyl-1,6-dioxaspiro[4.5]decane (5S,7S-conophthorin) has been identified as a possible kairomone that attracts bronze birch borers to susceptible trees. These susceptible trees include Eurasian varieties and stressed native North American species. While synthesized in the past, a scalable, cost efficient synthesis of this kairomone will likely enable its production industrially, and help allow for mass

detection/trapping strategies of the pest to be implemented before infestations occur.