



GUEST SPEAKER:

**Professor
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CHEMISTRY COLLOQUIUM

WED., SEPTEMBER 9, 2015, 12:00 PM

HUTCHISON HALL, ROOM 140

LANDER AUD., University of Rochester

**Title: Using carbon-14 to investigate the response of
natural methane emissions to global warming**

Abstract:

Methane is a powerful greenhouse gas, and anthropogenic methane emissions are the second largest contributor to man-made global warming. Studies suggest that natural emissions of methane may increase in response to the warming, providing a significant positive feedback. Of particular concern are "old carbon" reservoirs, such as marine methane hydrates and permafrost. Both of these reservoirs are sensitive to warming and are large enough to increase the atmospheric methane concentration by an order of magnitude or more if a large fraction of the reservoir is destabilized. Our research group is testing the hypothesis that methane hydrates and / or permafrost can emit large amounts of methane to the atmosphere in response to warming. To test this hypothesis, we are studying the previous time the Earth had gone through a large global warming – the last deglaciation, between about 10,000 and 20,000 years ago. We obtain large samples of ancient air from glacial ice cores and analyze the carbon-14 content of methane in this air to characterize the magnitude of methane emissions from old carbon sources. My talk will provide an introduction to ice cores as well as discuss our findings from methane C-14 measurements.

Host: Professor James Farrar, email: jfarrar@UR.Rochester.edu