



University  
of Windsor

Department of Chemistry & Biochemistry

# SOUSCC 42

42nd Southern Ontario Undergraduate Student Chemistry Conference

## Abstract Submission Instructions

ATTENTION: Before completing your submission, read the instructions carefully, and examine the sample abstract below. See page 2 for a sample abstract.

### At the abstract submission website:

1. The presenting author should enter all contact information and ensure that it is accurate.
2. Enter a title for your presentation in the abstract title box. Rich text may be used.
3. Enter the author information in the authors and author locations box. Rich text may be used.
4. Enter your abstract in the abstract box (see abstract formatting instructions below). You may type text directly into this box, or copy and paste plain ASCII text and add any rich text formatting that you may require.
5. Graphics (a single picture) can be included via the upload feature. Graphics should be in jpg or png format.

### Instructions for authors and author locations:

1. List of authors, separated by commas: given name, initial(s), surname. Underline the presenting author's name.
2. Numbered list of institutions/businesses and short addresses, with carriage return after each institution. Indicate the address of each author by placing the appropriate number (in superscript font) after that author's name in the list (see sample abstract below).

### Instructions for abstract structure:

1. Abstract text (no more than 300 words)
2. References/bibliography (optional) - citations to references in the text should be made with superscripted numbers (see sample abstract below).
3. Abstracts should be 300 words or less.
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## Sample Abstract

### Title (entered in title box):

Multi-Frequency EPR Analysis of Dipolar and Exchange Interactions Between Manganese and Tyrosine In The S<sub>2</sub> Yz State of Photosystems II

### Authors and author locations (entered in authors box and author locations box):

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### Abstract (entered in abstract box):

Acetate-inhibited photosystem II, upon room temperature illumination, exhibits a 240 G wide X-band EPR signal at 10 K.<sup>1</sup> This EPR signal arises from an interaction between the S<sub>2</sub> state of the Mn<sub>4</sub> cluster and an oxidized tyrosine residue, Yz.<sup>2</sup> In the present study, the exchange and dipolar interactions between the two paramagnetic species are simulated at X and Q-band frequencies utilizing second-order perturbation theory.<sup>3</sup> The positions and relative intensities of the hyperfine lines in the S = 1/2 S<sub>2</sub>-state multiline EPR signal are accurately simulated by including g-anisotropy and four sets of axially symmetric <sup>55</sup>Mn hyperfine tensors. These parameters are then used to simulate the dipolar and exchange interactions giving rise to the broad experimental S<sub>2</sub> Yz EPR signal at X and Q-band frequencies. A precise distance determination between the Mn<sub>4</sub> Cluster and Yz in the O<sub>2</sub>-evolving complex better enables us to elucidate the direct involvement of Yz in water-oxidation chemistry. Supported by NIH GM32715 and GM36442 (Yale) and NIH GM21156 (Denver).

1. Boussac and Rutherford, *Biochem.*, **1988**, *27*, 3476.

2. Tang et al., *J. Amer. Chem. Soc.*, **1996**, *118*, 7638.

3. Eaton et al., *J. Magn. Res.*, **1983**, *52*, 435.