**We thank the editors and reviewers for their constructive feedback. Our responses are provided below in red under each set of comments.**

**Editorial comments:**  
The manuscript has been modified by the Science Editor to comply with the JoVE formatting standard. Please maintain the current formatting throughout the manuscript. The updated manuscript (553314\_R0\_080516.docx) is located in your Editorial Manager account. In the revised PDF submission, there is a hyperlink for downloading the .docx file. Please download the .docx file and use this updated version for any future revisions.  
  
Changes to be made by the Author(s):  
  
1. Please take this opportunity to thoroughly proofread the manuscript to ensure that there are no spelling or grammar issues. The JoVE editor will not copy-edit your manuscript and any errors in the submitted revision may be present in the published version.  
  
2. Please abbreviate all journal titles.  
  
3. Please obtain explicit copyright permission to reuse any figures from a previous publication. Explicit permission can be expressed in the form of a letter from the editor or a link to the editorial policy that allows re-prints. Please upload this information as a .doc or .docx file to your Editorial Manager account. The Figure must be cited appropriately in the Figure Legend, i.e. “This figure has been modified from [citation].”  
  
4. Grammar: 6.2.3 – Please convert to a note or use imperative tense.  
  
5. Results: Please discuss the interpretation of the data in Figures 5 & 6 in the Results section. What do the results shown mean?  
  
6. Discussion: Please discuss the significance with respect to alternative methods. Please also discuss the future applications of the method.

1. We have thoroughly proofread the manuscript and corrected all spelling and grammar issues.

2. All journal titles are now abbreviated.

3. Explicit permissions have been uploaded for all reused figures and the citations in the manuscript are per instructions from the respective journals.

4. Converted 6.2.3 to the imperative tense.

5. Discussion of the interpretation of the results in Figures 5 and 6, specifically the relative activity and selectivity of the various catalysts, has been added to the results section.

6. The significance with respect to other temperature-programmed methods, as well as alternative catalyst evaluation methods, has been added to the discussion section. Future applications of the method, such as the use of alternative reactant molecules, catalytic materials and reaction conditions have also been added to the discussion section.   
  
**Reviewers' comments:**  
**Reviewer #1:**  
*Manuscript Summary:*  
This manuscript details the use of temperature programmed reaction (TPRxn) equipment for the study of reaction pathways of acetic acid on MoC-based catalysts. The authors provide enough detail such that potential readers could construct and operate a TPRxn unit.  
  
*Major Concerns:*  
N/A  
  
*Minor Concerns:*  
The following minor revisions should be considered before final publication.  
-Line 112: The authors first use the abbreviation "mGC" in line 112 but don't define the abbreviation until line 123. They should define the abbreviation in Line 112, and perhaps add a brief explanation of the difference between a micro GC and a conventional GC.  
-Section 1.1.1: It would be helpful to include a reference here for GC/MS tuning and calibration because not all of the readers may be familiar with GC-MS equipment.  
-Section 1.1.5: I suggest using the term "saturator" instead of "bubbler". Also, could the authors provide some details of how they filled the saturator? These details would be helpful to readers trying to reproduce this saturator and who do not have experience with the flange connecting the stainless steel components to the glass components.  
-Section 1.3: The fittings connecting the quartz reactor to the stainless steel feed lines appear to be VCR fittings. Is this correct? It may be useful to provide this detail as well as information about the type and locations of different fittings (i.e., ultra-torr, compression, VCR, etc.)  
-I suggest using the term "condenser" instead of "knockout" in the Discussion and Figure caption.  
  
*Additional Comments to Authors:*  
N/A

Line 112: We have now defined μGC in line 112 and removed the definition from line 123. A brief explanation of the difference between a μGC and a conventional GC has been added to the text near line 117.

Section 1.1.1: References for detailed descriptions of gas chromatograph calibration are now included. In addition, a brief overview of the specific calibration method used in this work has been added to the NOTE below Section 1.1.1. The reader is referred to their analytical equipment operating manuals for tuning methods, as these are often instrument/manufacturer specific.

Section 1.1.5: All instances of the term “bubbler” have been replaced with the term “saturator.” Additional details of the procedure used to fill the saturator have been added to 1.1.5

Section 1.3: The fittings connecting the quartz reactor to the stainless steel feed lines are VCR fittings, but this is not a strict requirement, as Ultra-Torr fittings are also suitable for this application. The only Ultra-Torr fitting currently on the system is used with the reactor thermocouple and a bored-through tee union. A brief description of the fittings used and required throughout the system has been added to the NOTE following 1.1.2.

The term “condenser” generally refers to a heat exchanger intended to condense a gas. The knockout vessel used in our application is intended to collect any already condensed gas to prevent it from entering the μGC. Thus, we think that “knockout” is the appropriate term for our system. The purpose of the vessel is described in the Discussion section.

**Reviewer #2:**  
*Manuscript Summary:*  
This manuscript describes the details associated with measuring the activity of molybdenum carbide catalysts on the deoxygenation of acetic acid. This detailed report is based off of measurements the same group reported in recent Angew. Chem. and ACS Catalysis publications. This is a well written, detailed explanation of the measurements, an important contribution because this measurement is unique and not associated with an instrument that can be easily obtained from a commercial source and was likely "home-built".  
\* Why are some of the steps highlighted in the draft? There does not seem to be an explanation of how the highlighted steps differ from the non-highlighted text.  
\* Perhaps the authors could explain what the state of the catalyst is in the pretreatment step. For many applications of molybdenum carbide catalysts there is an in situ carburization step but it appears that the catalyst is going into the reactor as a molybdenum carbide already.  
\* The steps are clear and sound and, without actually doing the measurement, they appear to be complete.  
\* The abstract is missing the second parenthesis after "spectrometer".  
  
*Major Concerns:*  
N/A  
  
*Minor Concerns:*  
N/A  
  
*Additional Comments to Authors:*  
N/A  
  
1. The highlighted steps indicate the protocol text we want featured in the video, per JOVE author instructions.

2. Information regarding the general state of the catalytic materials has been included in a NOTE following 3.1. Because of the difference in the various molybdenum carbide materials used (i.e., crystal structure, morphology, and composition as a result of the particular synthetic method used), we chose not to include this specific information regarding the precise state of the catalyst materials. The appropriate references were included to direct the reader to the synthetic methods and corresponding characterization data. A justification for the hydrogen pretreatment has been added.

3. The parenthesis after “spectrometer” has been added. The authors apologize for the error.

**Reviewer #3:**  
*Manuscript Summary:*  
This paper presents work regarding an experimental system of temperature-programmed reaction as well as its application for the deoxygenation of acetic acid on molybdenum carbide catalysts. The paper is well-written for providing clear and detailed demonstration for the setup and use of this system using acetic acid deoxygenation as an example. This paper indicates that the system with both GC and MS equipped is a powerful tool for catalyst testing in various ways in terms of temperature-programmed techniques. I recommend accepting the manuscript as is. It will be a valuable reference for other researchers who are having similar needs for catalyst performance testing.  
  
*Major Concerns:*  
N/A  
  
*Minor Concerns:*  
N/A  
  
*Additional Comments to Authors:*  
N/A