

AC 2008-2965: JUMR: JOURNAL OF UNDERGRADUATE MATERIALS RESEARCH

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Susan Holt is a graduate research assistant in Materials Science and Engineering at Virginia Tech. She was a member of the inaugural editorial board for JUMR and continues her membership on the editorial board as the Communications and Data Manager. She is currently working on her PhD in MSE and plans to teach in academia when she graduates.

Journal of Undergraduate Materials Research (JUMR)

Abstract

The Journal of Undergraduate Materials Research (JUMR) is a scientific journal dedicated to research performed by undergraduate students in materials related fields. JUMR is published annually and is a student run endeavor. The editorial board is currently made up of graduate and undergraduate students from many departments including the Departments of English and Materials Science and Engineering. The primary goal of the journal is to provide a venue for undergraduates to publish research performed in materials related fields. The secondary goals are to provide opportunities for undergraduates to practice their communication skills and learn about peer-reviewed publications, as well as providing opportunities for editorial board members to participate in the administration of creating a peer-reviewed publication.

Introduction

The Journal of Undergraduate Materials Research (JUMR) was developed in 2004 by the department of Materials Science and Engineering (MSE) at Virginia Tech. The primary purpose of this journal is to provide undergraduate students a chance to publish their research. The secondary purposes are to provide undergraduate and graduate students experience with the full publishing process.

History

In August of 2004, MSE graduate students at Virginia Tech formed the first editorial board for JUMR. The project was conceived after the department head received several publications from other departments which had a wide variety of formats and various depths into materials research. He discussed the possibilities of creating a publication for the Virginia Tech MSE department with Diane Folz. After several conversations, it was decided to make a student run publication focused on undergraduate materials research. Diane then contacted the graduate student officer for the university chapter of MEPS (Materials Engineering Professional Societies), Ben Poquette. When Ben and Diane started discussing ideas, the publication evolved from a smaller endeavor into something closer to the professional journals, even though it would still be student run.¹

Ben contacted others who would be interested in starting this undergraduate materials research journal and investigated what publications currently existed for undergraduate research. Most of those publications were multidisciplinary and only accepted work from their own schools. The Virginia Tech students wanted to take the idea a step further by focusing on MSE and including work from other schools.²

The first editorial board did not yet have the mechanisms in place to accept submissions from other schools, so they drew the papers from the MSE senior design class of that year. The first edition of JUMR was dedicated to Alfred Knobler due to his vision to encourage collaboration between the English and MSE departments.³

The design of the journal layout was initiated by one of the English faculty's design classes. Several groups in the class each created a design for JUMR. The student editorial board chose one of the designs as a basis and, with the help of the faculty advisors and new English student editorial board members, the final layout design was created.

The following year, the editorial board reorganized to form officer positions. This editorial board called for abstracts from Universities all over the world. The second volume of JUMR contained papers from many universities across the United States and more than one international submission.⁴

The editorial board for the third volume included students from departments other than MSE and English. This edition contained papers from departments other than MSE, showing that materials research is conducted in many disciplines.⁵

The fourth volume editorial board intends to appoint student representatives at other universities to solicit papers, facilitate submissions, and guide review processes.

Benefits to Undergraduates

The benefits of JUMR to the undergraduate submitters are numerous. Not only do they get the opportunity to publish in a journal as an undergrad student, they also acquire the experience in submitting an article in accordance with specific guidelines and participating in the review process. This experience will serve them well in the future as professionals. Undergraduates have a further opportunity to gain valuable experience by presenting at the JUMR symposium at Materials Science & Technology (MS&T) conferences. JUMR ran this symposium in 2007 and, due to its success, has approval to run the symposium again for 2008.

The reason JUMR is a special opportunity is that it is only for undergraduate submissions. The guidelines and review process take the students' level into account. The students are compared with their peers, not with others who have significantly more experience. This protocol encourages the students to write and revise their own papers rather than having an advisor or supervisor writing the paper and adding the student as an author.

At the JUMR symposium, the undergraduate student is once again in a session that is for undergraduate presenters. The student is not compared with more experienced presenters and they have the opportunity to present their work to their peers as well as to faculty and industry professionals. The undergraduates also get to start networking with those peers, learning what research other undergraduates are doing, as well as making friends and contacts for the future.

Benefits to the Editorial Board

JUMR has somewhat hidden benefits to the student editorial board. The board does have faculty advisors, but the day to day decisions and overall production of the journal are the responsibility of the student editorial board. This board is composed mainly of graduate students from MSE

and English, but also has graduate students from other departments and undergraduates from MSE.

The value of this experience to this group of students is extraordinary. The editorial board created By-Laws and Operating Procedures so that future boards would have the guidelines they need to carry out the publication of future volumes. This ensured that the vision of the editorial board could be carried out by future boards without serious misunderstandings. The board also keeps a list of suggested modifications, so that improvements can be made from year to year.

The editorial board votes on the officers who must be the motivators, especially the Editor-in-Chief. The individual officers acquire significant experience in their areas, but the entire board is exposed to all aspects of publishing the journal, including submission management, review processing, layout, public relations, funding, editing, printing, distribution, and communication during all phases.

Submission management mostly consists of soliciting submissions and making sure that all required documents are received in accordance with submission guidelines. This can be a significant undertaking since less than half the submissions contain all the required elements during the initial submissions. Follow-up communications are essential to help the submitters understand what further documentation are necessary for the review process to commence and to allow for potential publication of the submission.

Review processing consists of determining who will review each article, distributing the articles for review, collating the reviewers' comments, sending those comments to the authors and making sure the revised article is in accordance with those reviewers' comments. The editorial board continues to gather names of those interested in reviewing articles. As this list grows, it may be possible to match a reviewer's field of expertise with the article topic. Right now, the list is not yet sufficient to allow for this matching. Therefore determining who will review the article just means making sure there are sufficient reviewers for each article.

Most of the communications are conducted electronically so distributing the articles for review currently requires combining text and graphics elements into one document. Alternative submission methods which would eliminate this step are still under discussion. The reviewer also receives a review form which shows what the editorial board is looking for with respect to the submission quality.

Collating the reviewers comments includes prompting those reviewers who have not returned their reviews in a timely manner. It also includes adding comments from the editorial board when necessary. Sometimes the editorial board notes that certain reviewer comments are beyond what is expected of the submitter, for example, the board does not expect submitters to perform more research to revise their submission. Sometimes the editorial notes that the focus of the article is not appropriate for a materials research journal.

The reviewer's comments are sent to the submitter with the only editing being removing the reviewer's name. That is why the editorial board sometimes sends comments to clarify what is actually expected in the submitter's revisions. When an article requires major revisions, the

submitter is provided the opportunity to revise the article. If the submitter does not have sufficient time for this revision, the submitter is allowed to resubmit the article for the next volume.

Once the submitter revises the article, it is evaluated by the editorial board to verify that sufficient revisions have been made. Sufficient revisions are completely dependent upon the changes suggested by the reviewers and the editorial board.

The layout design was initially created by the English class as mentioned previously, but each volume has to be inserted into the template and modified as necessary. The number of technical papers in each volume varies as well as the number of pages and figures in each paper. Each volume also has featured articles written by board members and other related sources. Finally, the cover must be created.

Public relations involves creating press releases, PowerPoint presentations, funding proposals and other documentation as needed. Funding was one aspect that was initially of little concern since the department funded the first volume. Once the first volume was published, there was thought that more funding would be beneficial so that more copies could be printed and distributed. The funding sources were discussed and it was decided that advertising would not be an option for the immediate future. Instead, donations are requested through the University Development office. JUMR is also currently working on funding proposals to agencies such as the National Science Foundation. These discussions were eye opening for many members of the editorial board.

Editing is involved in all phases of the production. Each time a document is created, whether it is a Call for Papers or a press release, the document must go through an internal review process and is edited appropriately. Printing decisions included deciding what JUMR should look like, black and white or color, glossy or flat paper, the number of pages, and what kind of binding. The number to be printed was also discussed in parallel with the proposed distribution list. Distribution is mainly to undergraduates and potential undergraduates in the materials research fields. JUMR is also available to academics and professionals who are interested in the students' current work.

Communications during all phases was not trivial. In fact, communications has been a much bigger aspect than the Communications and Data Manager expected. Communications must be conducted not only within the editorial board, but also with the undergraduates who are submitting the articles, reviewers, and external sources who are interested in more information about the journal. Finally, the archives of communications must be kept so that the current board has access to all the necessary documentation, and so that future boards can learn from what was used in the past.

Thoughts for the future

Now that the journal has been well established and the editorial board is now asking when, not if, the next volume will be published, assessment is needed to determine the effectiveness of JUMR. The previous assessment consisted of three questions: Was the journal published? How many

articles were published? How big was the editorial board? Future assessment will require much more in depth questions and possibly a survey of the submitters to determine the impact of the journal.

Conclusion

JUMR has been an educational experience not only for the undergraduates submitting to the journal, but also for the editorial board working to publish each volume. The process of publication changes each year and creates new learning experiences for all those involved in each volume.



Figure 1. Volume 1 of JUMR

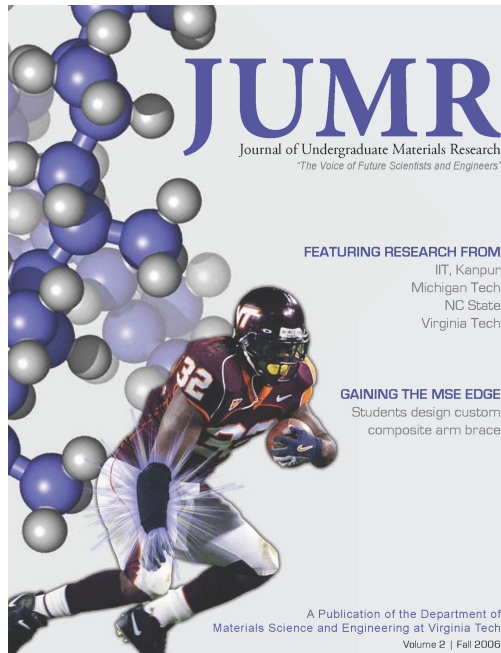


Figure 2. Volume 2 of JUMR

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