How to Write an Abstract

ABSTRACT

1. **Write an Abstract for the assigned journal article.**
2. **The Abstract is to be no more than two pages, double- spaced, Times New Roman, 12 font.**

Abstract

The Abstract Outline:

a. **Tell the reader what you did in this research.**
   1. **Introduction and Background.**
   2. **Objectives of the study.**
   3. **Brief description of the apparatus used.**

b. **What were your results in this study?**
   1. **This section should be a condensation of the discussion section of your report.**

Abstract

c. What did you conclude in your study?
   1. This section should be a condensation of the conclusion section of your report.
d. What do you recommend based on your study?
   1. This section should be a condensation on the recommendation section of your report.

The abstract does not generally contain equations or references.

How to Write an Abstract

Despite the fact that an abstract is quite brief., it must do almost as much work as the multi-page paper that follows it. In a computer architecture paper, this means that it should, in most cases, include the following sections. Each section is typically a single sentence, although there is room for creativity. In particular, the parts may be merged or spread among a set of sentences. Use the following as a checklist for your next abstract:

- **of your work, the difficulty of the area, and the impact it might have if successful.**

How to Write an Abstract

Motivation:

***Why do we care* about the problem and the results? If the problem isn't obviously "interesting" it might be better to put motivation first; but if your work is incremental progress on a problem that is widely recognized as important, then it is probably better to put the problem statement first to indicate which piece of the larger problem you are breaking off to work on. This section should include the importance**

How to Write an Abstract (Continued)

- **Problem Statement:**

  What problem **are you trying to solve? What is the** ***scope*** **of your work (a generalized approach, or for a specific situation)? Be careful not to use too much jargon. In some cases it is appropriate to put the problem statement before the motivation, but usually this only works if most readers already understand why the problem is important.**

How to Write an Abstract (Continued)

- **Approach:**

  ***How did you go about solving or* making progress on the problem? Did you use simulation, analytic models, prototype construction, or analysis of field data for an actual product? What was the *extent of* your work (did you look at one - application program or a hundred programs in twenty different programming languages?) What important *variables did* you control, ignore, or measure?**

How to Write an Abstract (Continued)

- **Results:**

  ***What's the* answer? Specifically, most good computer architecture papers conclude that something is so many percent faster, cheaper, smaller, or otherwise better than something else. Put the result there, in numbers. Avoid vague, hand-waving results such as 'Very", "small", or "Significant." If you must be vague, you are only given license to do so when you can talk about orders-of-magnitude improvement. There is a tension here in that you should not.**

How to Write an Abstract (Continued)

- **provide numbers that can be easily misinterpreted, but on the other hand you
don't have room for all the caveats.**
- **Conclusions:**

  ***What are the implications of* your answer? Is it going to change the world (unlikely), be a Significant "win", be a nice hack, or simply serve as a road sign indicating that this path is a waste of time (all of the previous results are useful). Are your results *general,* potentially generalizable, or specific to a particular case?**

How to Write an Abstract (Continued)

Other Considerations:

An abstract must be a fully self-contained, capsule description of the paper. It can't assume (or attempt to provoke) the reader into flipping through looking for an explanation of what is meant by some vague statement. It must make sense all by itself. Some points to consider include:

- **There may be a 100 word limit**
- **Any major restrictions or limitations on the results should be stated, if only by using "weasel-words" such as "might", "could", *"may"*, and "seem".**

How to Write an Abstract (Continued)

- Think of a half-dozen search phrases and keywords that people looking for your work might use. Be sure that those exact phrases appear in your abstract, so that they will turn up at the top of a search result listing.
- Be sure to include in the problem statement the domain or topic area that it is really applicable to.

How to Write an Abstract (Continued)

Simply put:

- **Try to stay within the 100 word limit**
- **In the first draft, note key facts, statistics, etc. that you need to include.**
- **Do not include a statement of scope; a sentence like "this paper will look at..." is inappropriate in an informative abstract. .**
- **Be sure to omit or condense lengthy examples, tables, and other supporting detail.**

How to Write an Abstract (Continued)

- **Revise the draft into smooth, stand-alone prose; the abstract itself should be a mini-essay.**
- **Edit the revision. Be sure that the abstract is complete and accurate. Double check that the abstract is written in the same voice as is the paper.**
- **Have your mentor review this abstract**

How to Write an Abstract (Continued)

- **provide numbers that can be easily misinterpreted, but on the other hand you don't have room for all the caveats.**

- **Conclusions:**

  ***What are the implications of* your answer? Is it going to change the world (unlikely), be a Significant "win", be a nice hack, or simply serve as a road sign indicating that this path is a waste of time (all of the previous results are useful). Are your results *general,* potentially generalizable, or specific to a particular case?**

Abstract

During this experiment, liquid-liquid extraction was studied in 3-inch diameter, 3-feet long Schiebel Column that contains 36 stages and is equipped with 1.1-inch wide impeller. Feed of 2 wt% Acetic acid in n-hexanol was introduced at the bottom of the column. The water was fed at the top of the column to extract Acetic acid from the alcohol-rich phase. The extraction was studied at 6 different impeller speeds in the range of 150 RPM to 400 RPM. Titration analyses were carried out on the feed, extract, and the raffinate samples to obtain the mole fraction of Acetic acid in each phase at each impeller speed. The amount of acid lost, gained and the percent closure between the two were determined from the available data. The number of theoretical stages was determined by both analytical methods as well as graphical methods. The Height Equivalent of Theoretical Stages and the Overall Column Efficiency were determined at each impeller speed. Finally, the theoretical stages per mixing section were correlated with the power function for the system.

Abstract (Continued)

The acetic acid lost by the alcohol-rich phase and the acid gained by water increased with increasing impeller speed, and approached a constant value at the last three impeller speeds. The percent closure was found to be less than 20% for all six trials. The number of ideal stages obtained graphically and analytically ranged in between 2.5 and 3.5 stages. There was less than 5% difference in the number stages obtained by each method. The higher agitation resulted in higher number of ideal stages suggesting better extraction at higher agitation. The Height Equivalent of Theoretical stages decreased with increasing impeller speed. The Overall Column Efficiency was found be less 10% at every impeller speed. The Overall Column Efficiency increased with increasing impeller speed suggesting better performance of column at a higher agitation. The power consumption of the system increased with increasing impeller speed and the number of ideal stages per mixing section increased with rise in the power function.

Abstract (Continued)

- **It is recommended that the experiment should be studied with various types of agitators to find out the effect of impeller geometry on the performance of the Schiebel Column. It is recommended that the titration is carried out for at least three samples for each impeller speed.**

Example of Abstract

Indoor Hybrid System Cooperating Wi-Fi and Visible Light Communication

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Pierre A Mbe Fokam, Advisor: Dr. A Khreishah, and Mentor: S.H. Shao, PhD Student
Department of Electrical and Computer Engineering
New Jersey Institute of Technology, Newark, NJ 07102 USA

Abstract: Nowadays, indoor mobile devices connect to Internet using Wi-Fi, which uses Radio Frequency (RF) band. The growing number of devices and high volume of network usage have drastically increased the use of the Wi-Fi. The overuse of limited resources or spectrum of RF has resulted in wireless traffic bottlenecks. Visible Light Communication (VLC) has several advantages that can be exploited to improve the quality of wireless communication. VLC offers an unlicensed wide bandwidth, high security, low energy consumption, and dual use. This research will propose a system involving the coexistence of VLC and Wi-Fi supported by an asymmetric network scheme. This system will provide a faster connection between the client and server comparing to the traditional Internet connection using Wi-Fi only. Our main focus consists of establishing the connection between the client and the server in a dual networking system involving simultaneously VLC and Wi-Fi. The client uses the uplink channel to make a request to the server. Then utilizes the traditional wireless to receive data from the server that uses the downlink via VLC as shown on the figure bellow. We have successfully tested the throughput from the client prospective. Future research will concentrate on the security aspect of this dual network.

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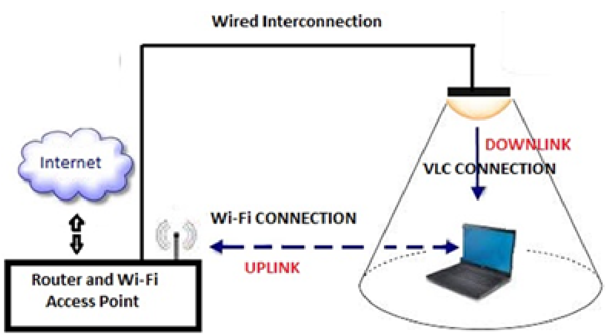

Proposed hybrid Wi-Fi and VLC network model

Example of Abstract

Heterogeneous Impact Initiation of Tungsten-based Reactive Materials

Noor Aly, Dr. Mirko Schoenitz, Dr. Edward L. Dreizin
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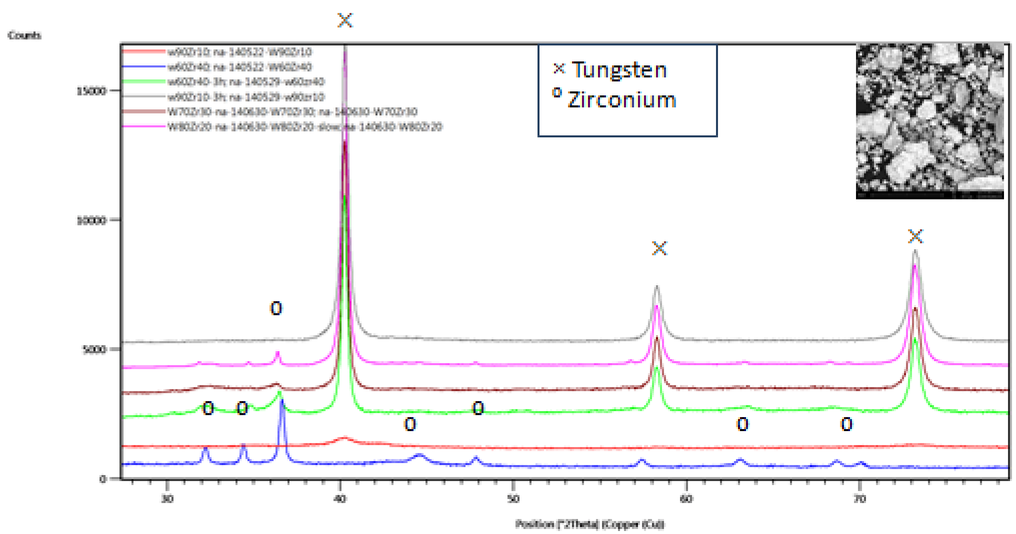
New Jersey Institute of Technology, Newark NJ 07102

Abstract: As a high-density metal, tungsten is of interest for use in penetrators and munitions casings. However, tungsten is not readily ignited, potentially leaving its chemical energy of oxidation unused. In this effort, a set of tungsten-rich composite materials with more than 50 % of tungsten by weight were prepared by mechanical milling. The second component metal was zirconium. Substantial powder particle size reduction was observed with short milling times. The addition of zirconium causes tungsten to amorphize, with average particle sizes around 10µm. Tests of sensitivity to electric sparks showed that all materials could be reliably ignited with subsequent combustion times of about 100 ms, contrary to unmodified tungsten. Constant-volume aerosol combustion tests showed that as part of the prepared composites, tungsten burns to a substantial degree. Further systematic experiments will be used to establish minimum initiation energies as a function of bulk composition and degree of refinement and amorphization. Net energies that can be recovered by combustion will be determined.



SEM image and X-ray diffraction curve depicting phase compositions of W-Zr powders at varied weight percents