WRITING AN ABSTRACT

What it is, what to include, and how to make it a good one
What is an abstract?

- Stand alone information about the contents of a report, presentation, or article
- An overview of what is included in the article
- Attention grabbing section to convince others to read your work
Types of Abstracts

- Descriptive — “summarizes the purpose, scope, and methods used to arrive at the reported findings”\(^1\)

- Informative — Includes everything listed above. Additionally includes “results, conclusions, and recommendations”\(^1\)

Sample Abstract

Title
A study on a CMOS analog cell-library design-a CMOS on-chip current reference circuit

Authors
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Purpose
In this paper, a new CMOS on-chip current reference circuit for memory circuits, operational amplifiers, comparators, and data converters is proposed. The reference current is almost independent of temperature and power-supply variations. In the proposed circuit, the current components with positive temperature coefficients and negative temperature coefficients cancel each other out. While conventional current and voltage reference circuits require BiCMOS or bipolar process, the proposed circuit can be integrated on a single chip with other digital and analog circuits using a standard CMOS process without an extra mask. The prototype is fabricated employing the Samsung 1.0 μm p-well double-poly double-metal CMOS process and the chip area is 300 μm×135 μm. The proposed reference current circuit shows a temperature coefficient of 380 ppm/°C with temperature changes from 30°C to 80°C, and output variation of ±1.4% with supply voltage changes from 4.5 V to 5.5 V.
Fabricating Genetically Engineered High-Power Lithium Ion Batteries Using Multiple Virus Genes Yun Jung Lee 1, Hyunjung Yi 1, Woo-Jae Kim 2, Kisuk Kang 3, Dong Soo Yun 1, Michael S. Strano 2, Gerbrand Ceder 1, Angela M. Belcher 4*

Development of materials that deliver more energy at high charge/discharge rates is important for high power applications, including portable electronic devices and hybrid electric vehicles. Reducing materials dimensions for lithium ion batteries can boost Li\(^+\) ion and electron transfer in nanostructured electrodes. We developed a strategy for attaching electrochemically active materials to conducting carbon nanotubes networks through biological molecular recognition. By manipulating two genes of the M13 virus, viruses were equipped with peptide groups with affinity for single-walled carbon nanotubes (SWNTs) on one end and peptides capable of nucleating amorphous iron phosphate (a-FePO\(_4\)) fused to the viral major coat protein. For the virus clone that demonstrated 10 times greater affinity towards SWNTs, power performance of a-FePO\(_4\) was comparable to that of crystalline lithium iron phosphate (c-LiFePO\(_4\)). The electrodes showed excellent capacity retention upon cycling at 1C for at least 50 cycles. This environmentally benign low temperature biological scaffold could facilitate fabrication of electrodes from materials that have been excluded because of their extremely low electronic conductivity.
Your abstract

- Title
- Author(s)
- Purpose
- Methods and Scope
- Findings (if there are any)
- Conclusions (if there are any)
- Recommendations (if there are any)
Procedure for writing an abstract

- Preferably, write the abstract after you’ve finished the research
- Use formal grammar
- Outline your research project
- Learn format expectations of publication source
- Determine if you will use a descriptive or informative format
- Use clear and concise language
- Spell out abbreviations
Any questions