



– Announcing a new IEEE Open Access Journal –

CALL FOR PAPERS

– **DEADLINE Dec 15th 2014 for First Inaugural Issue** –

JOURNAL OF EXPLORATORY SOLID-STATE COMPUTATIONAL DEVICES AND CIRCUITS

SCOPE SUMMARY:

This is an “Open Access” IEEE journal for the publication in multi-disciplinary fields of research towards solid-state circuits using exploratory materials and devices for novel energy efficient computation beyond standard CMOS (Complementary Metal Oxide Semiconductor) transistor technology. The focus of the publication is to be on the exploration of materials, devices and computation circuits to enable Moore’s Law to continue for computation beyond a 10 to 15 year horizon (beyond end of the roadmap for CMOS technologies) with the associated density scaling and improvement in energy efficiency. Examples of appropriate topics to submit would be research milestones in the integration of exploratory materials, devices and computation circuits based upon any of the following:

- Quantum electronic devices (e.g. tunneling)
- Spintronics and Nanomagnetism devices
- Straintronics (piezo-electric) devices
- Plasmonics
- Functional materials
- High fan-in, fan-out logic circuits
- Reconfigurable and non-volatile computation circuits
- Computation circuits comprehending the on-chip communication means

This publication provides a unique interdisciplinary forum of scientists and engineers to critique and document progress in this field of promising alternatives to CMOS technology for computation devices, circuits and architecture.

DETAILED SCOPE:

The publication is designed for fast publication of results unifying the areas of solid-state materials, devices, and circuits for novel computation (logic, memory, and communication) towards the exploration for the beyond CMOS technology. The publication is not limited to digital information processing, but also encompasses non-Boolean computation - including analog, neuromorphic computation, and novel concepts in computer automata. It is envisioned that these exploratory methods of computation could augment CMOS.

Research is preferred in materials, devices, and circuits that transcend, unify, and extend these subject boundaries to the next level of integration. Manuscripts on materials are welcomed as long as they explicitly show a path to a device application and have impact. Also, manuscripts on devices are welcomed as long as they show potential to have application in an integrated circuit for computation. Publications on computation circuits and systems are appropriate if they are based on concrete exploratory devices.

The Journal of Exploratory Solid-State Computational Devices and Circuits provides a common venue for researchers in these fields to identify, distill, test and develop ideas for manufacturable information technology and consumer electronic technologies, enabling continuous scaling of accessible computational power. By its nature, the Journal of Exploratory Solid-State Computational Devices and Circuits is a publication that connects materials, devices, and circuits vertically and specifically in the area of energy-efficient computation.



PAPER FORMAT DESCRIPTION:

Papers can have 2 parts – the first part is a 4-8 page main paper (following a strict format – template available from website), and the second part is the supplementary material. The main paper itself will just focus on describing why the work is important, the state of the prior art, the key new accomplishment(s) or results, and then what the research directions are going forward. The main paper can have an accompanying supplementary material (detailed methods) part. The supplementary material is not mandatory, but authors are strongly encouraged to submit supplementary material, which will increase the chance of acceptance. The Supplementary material (detailed methods) will be peer reviewed along with the main paper. The ScholarOne website will have the guidelines for the two part submission – the main and the supplementary material.

JxCDC IS AN OPEN ACCESS ONLY PUBLICATION:

Charge for Authors: \$1,350 USD per paper

Paper submissions must be done through the ScholarOne Manuscripts website:

<https://mc.manuscriptcentral.com/jxcdc>

Guidelines for papers and supplementary materials, as well as a paper template, are provided at this website.

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The Journal of Exploratory Solid-State Computational Devices and Circuits is a publication that connects materials, devices, and circuits vertically and specifically in the area of energy-efficient computation.

Style guidelines for the main paper:

The main report (min. of 4, max. of 8) is written in format of a letter. Due to their letter nature, the research must be original and must be of interest to research scientists/engineers and industry in related fields.

Abstract guidelines: The report begins with a fully referenced paragraph, ideally 200 words aimed at readers in the general area of engineering and physical sciences. The references must be up-to-date (e.g. referring to the best available materials, devices, circuits) & convey the relevance and originality of the research. This paragraph starts with a 3-4 sentence basic introduction to the problem area explaining the relevance and the issues. This is followed by a one-sentence statement of the main conclusions (e.g. 'Here we show' or equivalent phrase); and finally, 2-3 sentences putting the main findings into general context so it is clear how the results described in the paper have moved the field forwards.

Body: The text of the article must be succinct and start with general audience and progressively increase the complexity for experts. The body of the main paper must provide clear context to the present work based on established industry roadmaps, figures of merit or generally accredited framework (computational throughputs, leakage power, long form Reviews of Modern physics, IEEE proceedings, Nobel lectures). To enable the comparison it is encouraged that key quantitative findings of the paper are compared in a table with current references. Any concluding statements at the end of the article must be short since key conclusion is clearly articulated at the introduction. A repetition of the conclusions in the abstract should be avoided. Concluding statements explaining future possibilities or evolution are encouraged.

Style guidelines for supplementary material (methods paper):

The supplementary material is a unique format to encourage complete and clear communication of the relevant information to the experts in the area, while providing a citable source for the students for the innovations in scientific method: processing, modeling and theory. Long form derivations and code submissions are encouraged for theoretical and modeling papers. Modeling papers could for example provide all relevant data (not necessarily the code but they could) required to reproduce or validate the results. The JxCDC encourages the authors to put the experimental details such as fabrication methods, detailed characterizations, models or simulation methods (if it is a theory paper). The supplementary information therefore documents innovations in the experimental and modeling scientific methods, e.g. an innovative process technique to avoid interface effects, newly adopted differential equation solvers or innovative developments in device/circuit analysis can be included (and students/researchers will have a citable source online). Background materials that help the reader can be referenced in the supplemental material.

The supplementary material part begins with an unreferenced abstract (typically 150 words) and is divided into separate sections for introduction, results, discussion and methods. Introduction and discussion are brief and focused. The results section usually contains a general description followed by their validation. The methods section provides technical details necessary for the independent validation of the methodology, without referring to a chain of bibliographical references. The text of the supplementary material (excluding abstract, methods, references and figure legends) is limited to 6000 – 7000 words. Articles have no more than 12 display items (figures and tables). The results and methods should be divided by topical subheadings; the discussion may contain subheadings at the author's discretion. If statistical testing was used to analyze the data, the methods section can contain a subsection on statistical analysis. If significant EDA tools are employed, relevant validation can be provided for the novel approach. The experimental tools and the instrumentation used must be explained in a clear schematic preferably with the models (part numbers) mentioned.

In summary, all the new contributions and accomplishments are to be summarized in the 4 to 8 page main paper. The main paper format will be such that it can be understood by not only the expert but also the non-expert (providing the context to someone unfamiliar but wanting to follow progress in the field). All experimental or simulation methods to enable reproducing/validating the results of the paper are in the supplementary material (detailed methods) part.