Arun Woosaree
Donadeo Innovation Centre for Engineering
9211-116 Street NW
Edmonton, Alberta
Canada T6G 1H9

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Wayne Defehr
Department of English and Film Studies
3-5 Humanities Centre
University of Alberta
Edmonton, Alberta
Canada T6G 2E5

Dear Mr. Defehr,

Moore's Law is coming to an end due to the physical size of the silicon atom, which will limit the size of transistors in semiconductor chips. Without the ability to make smaller, more efficient transistors such that we can fit more transistors in the same area as previous generations of microprocessors, computers cannot be made faster while maintaining the same form as we know them today. This means that, unless research is done to find other suitable semiconductors for making smaller transistors , we will hit a wall in computing where we are limited by processing speed of our computers. Right now, carbon nanotubes may seem as a promising material for semiconductors, being very small and conductive, but for the most part, carbon nanotubes grown from solids other than carbon (especially semiconductors) are too fragile for practical use. However, gallium nitride (GaN), which is already known for its fantastic semiconductor properties seems to be showing promise, given that it is already used in many industrial and military applications. Datacenters are reducing their power consumption right now by using power supplies which use GaN to convert voltages more efficiently, and Raytheon (a defense contractor company)

makes radar systems which use GaN.

Currently, the main reason we are not seeing GaN being used in consumer electronics is the

Part of my reasearch will be on how to lower manufacturing costs of GaN

Furthermore, it was originally developed for military radar chips.

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Sincerely,

Arun Woosaree

Links visited:

- http://fortune.com/2016/06/11/raytheon-next-gen-chips/
- https://arstechnica.com/information-technology/2016/06/cheaper-better-faster-stronger-
- https://www.allaboutcircuits.com/news/how-carbon-nanotubes-could-help-replace-silicon-
- https://www.berkeley.edu/news/media/releases/2003/04/09_tubes.shtml
- https://pdfs.semanticscholar.org/3fb6/afb5918951c44db170da745cc6aeb326da10.pdf
- http://www2.lbl.gov/Science-Articles/Archive/MSD-gallium-nitride-nanotube.html
- http://www.nbi.dk/~nygard/Integration_of_Carbon_Nanotubes_Stobbe_et_al.pdf
- https://www.sciencedaily.com/releases/2014/08/140827122509.htm
- https://www.cnet.com/news/life-after-silicon-how-the-chip-industry-will-find-a-new-fut
- http://epc-co.com/epc

This is an assignment for an English class. Therefore, it is not a real research proposal letter, and some 'facts' presented may not be correct, since some sources may not be reliable, or due to my misinterpretation of graduate-level articles.