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Design of a miniaturized nano-fluid pulsating heat pipe

A CPU's calculation speed is limited by the heat it produces. As CPU's become more powerful, they also generate more heat which must be removed or the chip will burn up. CPUs in laptops and some desktop computers are currently cooled using heat pipe heat sinks. However, as CPU's increase in power, greater heat transfer capacity will be required, and the capabilities of current heat pipe designs will be exceeded. A nano-fluid pulsating heat pipe has a much greater heat transport capacity and may be the solution. Thus far, large-scale nano-fluid pulsating heat pipes have been developed; however, if this technology is to prove useful in cooling laptops and other electrical equipment, the size must be greatly reduced. Thus, the purpose of this research project is to design, analyze, and optimize a micro-sized heat pipe. A prototype will then be built and tested for further improvements.