

**Quantum Computing.** Quantum computer is in the news lately as recently reported in MIT Technology review, vol. 116, no. 5. A quantum computer uses photons that exhibit quantum effects as the underlying transport mechanism whereas a digital computer uses electrons and/or the absence of electrons as the underlying transport mechanism. A classical computer has a memory made-up of bits (0, 1) where each bit represents a one or zero. A quantum computer maintains a sequence of qubits. A qubit (*See e.g.*, US Pat. No. 8,461,862) is the quantum equivalent of a bit. However, unlike a bit, a qubit can be in multiple states simultaneously. For example, a qubit could be a 0, 1 or both at once. That permits faster calculations for some problems and also poses certain challenges, because keeping qubits stable has proved difficult. In comparison, when the same phenomenon occurs in digital computer such as when the output of a flip flop oscillates between '0' and '1' the flipflop is said to be in 'metastable' state yielding to a certain delay in ascertaining the specific state (either 0 or 1) of the flip flop. Thus, this unwanted result leads to the quest for improving the response time of the basic devices of a digital computer. In its Oct. 11, 2013 Volume 13, Issue 638, the weekly magazine "The Week" reported a breakthrough in material engineering, which may lead to means for hauling data in the next generation of quantum computers. Physicists from MIT and Harvard have engineered a new form of matter that behaves "just like a lightsaber," the report stated. "For the first time, scientists have managed to clump together photons – massless particles of light that don't normally interact with one another – to form a molecule. When two lasers are aimed at one another, their beams typically pass through one another. But the photonic molecules created here push against and deflect each other" said Harvard physicist Mikhail Lukin.

**Smartphone Innovation.** In the smartphone arena, a Dutch designer conceived of a smartphone that you could keep upgrading for the rest of your life. The idea revolves around a device that utilizes swappable parts called "bloks," which lock into a base plate much like Legos do. "Users could theoretically choose the kind of screen they want, the quality of camera or how powerful they want their loudspeaker to be." YouTube features a video of this innovative smartphone.