2020: How Science Can Change Us

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One of the most predictive prophecies from a technology CEO stated “If anything kills over 10 million people in the next few decades, it’s most likely to be a highly infectious virus rather than a war”, Bill Gates TED Talk Transcript in 2015.

It has been a year since the outbreak of COVID-19 virus pandemic in the world.^[1] A long period of chaos, it is a great pleasure to see that we are on the correct track after wasting almost a whole year. Humans need science and technology in fighting such outbreaks, instead of pride and prejudice. Medical masks based on melt blown technology set the first line of defense.^[2,3] Professor Tsai’s invention of melt blown nano/micro fibers catch the nano and micro droplets in the air, which has lethal pathogens including corona virus. Nano technology as a new frontier of innovation at nano-scale made many high learning institutions reexamine their program curricula offering. A few pioneer universities in USA that started the Bachelor Degree in Nanotechnology or Nanomaterial includes; Northwestern University, Rice University, Virginia Tech., University of California (San Diego), Drexel University and SUNY Polytechnic Institute. A lot of other universities started to follow the trend, such as Northwest Missouri State University and Louisiana Tech University. From 2020, University of Arkansas at Pine Bluff started offering the first Bachelor’s degree in Nanoscience in the State of Arkansas. Definitely, this will not be the end of the list. Nanoscience has a great potential to open a bright future in nanoelectronics,^[4-6] nanomaterials,^[7] molecular manufacturing,^[8] quantum computing, nanomedicine, nanoscale machines for patients, molecular biology and even food,^[9] you name it. Nanotechnology might be the ultimate weapon to fight the enemy in nano/micro size. “Think small, very small.”

“It takes a village to raise a child”, and it takes the global effort to fight pandemic. As mentioned before, scientists will never fight alone.^[1] Thanks to the doctors, nurses, biologist, chemists, engineers, etc. From the time the pandemic commenced, scientists at all levels of expertise were at work and now everybody can notice the outcome (COVID-19 vaccine) showing directly how science and technology are beneficial.

What could be the next global crisis? Energy? Environment? Climate? We do not know. However, what we do know is that science and technology are essential. We may have cheaper and cleaner solar power energy,^[10] more efficient devices^[11] and anything science and technology can provide.

In this issue, Chen et al. reviewed recent advances of nanomaterial in photovoltaic technology, which is a direct and effective way to utilize solar energy. Mana reported nano ZnS based photoelectrochemical solar cell. Also in Jiang’s research paper, dense particle suspension flow in up bubbling fluidized bed (UBFB) is used as solar receiver for solar energy capture. In Atre’s research, they deposited In₂S₃ photosensitive thin films for photo-response. Li et al. studied the sub-picosecond optical response of metals related to electron dynamics. Theoretically, Cao and Li studied entropic fluctuating hydrodynamics for anomalous scaling in low-dimensional heat conduction.

Meanwhile, Patil and Prasad studied the physico-chemical parameters change of Bhogawati river during the Indian nationwide lockdown due to the Covid-19 pandemic. Many cases of Covid-19 were related to the cold chain transportation in China even after it once got under control. Kan studied the hypobaric storage conditions of *carassius auratus* and the related microorganism growth.

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Fig. 1 A. Recent advances in solar energy full spectrum conversion and utilization, by Liu (DOI:10.30919/esee8c416); B. thermal conductivity of PBX compound calculated by phonons of explosive and binder molecular crystals, by Yan (DOI:10.30919/esee8c1036); C. numerical study of parameters effect on thermo-flow characteristics of up bubbling fluidized bed particle solar receiver, by Chen (DOI:10.30919/esee8c932). Copyright @ Engineered Science Publisher LLC

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