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The preeminent material for space optics and structures-single crystal silicon

Space Debris Mitigation is a unique problem requiring a unique solution. Space debris includes all types of potentially harmful objects, both seen and unseen, such as man-made idle satellites, abandoned tools, gas cylinders and satellite parts from ruptured and/or impacted satellites. Most alarming is the growing number of close calls with Cosmic-made asteroids and comets. The current materials used in Space Optics continually misses seeing asteroids and ground optics see most of them-After they have passed the earth. In addition, present day technology cannot deter any space debris that doesn't burn up during atmospheric reentry, regardless of the source.

Large asteroids, called planetoids, are being seen and tracked, yet there is no proven option to deter from one or more causing global damage. Medium asteroids, called asteroids and small asteroids are called meteoroids, which can be city killers, are mostly never detected until they hit. This size asteroid has a signature that is too dim to detect or the surrounding planets are too bright and drown out any sign of the asteroid. Since the year 2000, over 28 Kiloton meteoroids, called meteorites after entering our atmosphere, have hit the earth. The near miss of the Russian city of Chelyabinsk in 2013 caused millions of dollars of damage and over 1200 physical injuries. This debris event caused mankind to begin asking" Why can we not see these objects and if we can see them, what can we do except evacuate?"

This class will show why asteroid detection is difficult and how to overcome these obstacles. After two decades of prototyping and third- party testing, including MDA SBIR's, McCarter has created a RL-6 silicon technology solution to build a Silicon Solar System, S^3, that will perform both as a detector of space debris and as a direct deterrence of damage caused by this debris. This system will not only see dark cold objects but also ultimately control their fate.

The S^3, will Seek-Track-Lase most space debris, operating as a squadron of individual satellites. The immediate mission will be to laser cut space trash, including dead satellites, to a safe size, then laser pulse it to slow and allow it to fall out of orbit. Lessons learned from clearing satellite orbits of trash will teach many valuable lessons such as proper positioning, power rate adjustments, responses of cut off pieces and guiding of trash to designated locations. To control micrometeorites, dust and/or paint flecks, it will be necessary to make a laser scanner screen. While taking out the trash doesn't seem to be an attractive or rewarding effort, we will show that only after this proof of concept will we have the confidence and experience needed to combat the incoming asteroids referred to in McCarter's SPIE paper as Space Invaders.

Biography

Douglas R McCarter is the Technical Integrator of McCarter Machine and Technology Inc., founded in 1981. McCarter's patented and proprietary silicon processes achievements were documented by published technical papers and over 50 oral presentations. In turn, he has won many awards, mentioned in Forbes.com, Kiplinger Letter, Entrepenuer.com, Nasa Tech Briefs, New Mexico Optics, Missile Defense Briefs Open and Classifi ed and recognized as the current world expert in precision silicon components. He has served as Member of Editorial Staff of Advanced Optical Technology, in Munich Germany since 2012. In 2016, Dr. Babin, USA Congressman District 37 and Leader of Nasa Funding, endorsed McCarter. In addition to over 3000 hours of Technical Schools, McCarter has been directly mentored for six years by the late Frank Anthony, Bell Labs Silicon Director and past 10 years Roger Paquin, Perk and Elmer retired Materials Expert. He is one of SPIE's Inaugural 18 Senior Members, Editor Member on AOT, Advanced Optical Technology in Munich and Committee Member of OMICS Laser and Photonics.

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