

LEMAIRE PATENT LAW FIRM, P.L.L.C.
EXPERTS IN PATENTING COMPLEX TECHNOLOGIES

Thursday, May 28, 2009

National Medal of Technology and Innovation
Nomination Evaluation Committee
c/o The United States Patent and Trademark Office
Attention: Jennifer Lo, Program Manager

Re: Nomination of Zalman M. Shapiro

Dear NMTI Committee Members:

I am Charles Lemaire, a registered patent attorney who has owned a patent-law firm in the Minneapolis, Minnesota area for the past five years. My firm employs six other patent writers — one other patent attorney, two patent agents, two technical writers and a paralegal. Prior to that, I practiced patent law for nine years at Schwegman, Lundberg and Woessner, a firm with more than 70 patent attorneys headquartered in Minneapolis. Before that I was an electronics engineer at IBM for 17 years. I am licensed to practice before the USPTO, the U.S. Supreme Court, the Courts of Appeal in the Federal Circuit and 8th Circuit, the International Court of Trade, and the State of Minnesota.

I have known Dr. Shapiro for almost two years while working on his allowed and soon-to-issue patent application titled "SYSTEM AND METHOD FOR DIAMOND DEPOSITION USING A LIQUID-SOLVENT CARBON-TRANSFER MECHANISM." When we started on his patent application, he was a spry 87 years of age. His intelligence and assistance in researching background technology while I drafted his patent application have been the most remarkable and lucid of any of the inventors I have worked with in my 16 years as a patent agent and patent attorney. Even though he has extreme difficulty reading due to macular degeneration, he has gone over every word of the patent application and a vast amount of prior art, and was able to locate one of the most pertinent patents (U.S. 3,142,539 to Brinkman et al. from the early 1960's) that would never have shown up in my searches of the computerized patent databases. He then carefully explained the differences between his invention and those described in the prior art and detailed the advantages over them, as well. His diamond-deposition invention can be implemented using liquid metal (such as molten sodium) as the solvent for dissolving graphite and epitaxially re-depositing the carbon, as diamond, at somewhat lower temperature on the seeds suspended by the flowing molten metal solvent. The invention can be used at low pressures (e.g., atmospheric pressure) and will significantly reduce the cost of producing gem diamonds as well as diamond substrates for electronics and diamond coatings for cutting tools, and hundreds of other new commercial applications that, heretofore, have been unattainable using methods currently in use. This would reduce "blood diamond" trade, increase domestic production to reduce the trade deficit, and produce new commercial ventures, all to the benefit of American society.

One of the most fascinating aspects of his diamond-deposition invention is the use of a fluidized bed wherein the diamonds are suspended in a vertical flow of molten metal to evenly deposit diamond on all surfaces, while incrementally cooling the solvent over a distance such that much more total diamond can be deposited than if deposition only occurred at a single temperature. This technique not only facilitates mass production, it can also produce significantly larger diamonds.

I have also talked with Dr. Shapiro extensively about his past inventions and read his patents on radio-isotope-powered cardiac pacemakers. In the late 1960's, he insightfully specified the usage of titanium shells for pacemakers (to avoid corrosion by bodily fluids), which are still the state-of-the-art in pacemaker fabrication.

His innovative work on the production of consistently pure, corrosion-resistant and ductile zirconium and hafnium have been crucial to the fabrication of nuclear power plants used for commercial electricity generation (which reduce greenhouse gasses) and warship locomotion (allowing strategic naval agility and much longer tours of duty for submarines and aircraft carriers) used by the United States Navy, to the great benefit of our country.

Dr. Shapiro's contributions are extremely significant in providing enduring and far-reaching benefits to the economic, social and environmental well-being of the United States and I strongly recommend his confirmation for this award.

Sincerely,



Charles A. Lemaire

Registered Patent Attorney and President of the Lemaire Patent Law Firm (LPatent.com)

(b)(6)

