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Prillings for Next-Generation Rocket Fuel

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Next-generation solid-sphere prillings were developed that have secondary and tertiary matrixes comprised of microcrystalline hydrocarbon nano-articles for use as an advanced hybrid rocket fuel based on liquid layer hybrid combustion theory. The microencapsulation process and instrument is a NASA spinoff technology first used to produce glass microbeads in space, and later to spawn creation of an arsenal of oil spill cleanup, medical, pharmaceutical, and food products. This technology represents "future fuels" that produce a very thin, low-viscosity, low-surface-tension liquid layer on the fuel surface when it burns. Driven by the oxidizer, liftoff and entrainment of PCM-droplets and secondary nanoparticle hydrocarbon components greatly increase the overall fuel mass transfer rate simulating a continuous spray injection system with the fuel components vaporization occurring around the droplets convecting between the melt layer and flame-front, resulting in higher regression rates and exponential increase in thrust.

For more information, visit http://contest.techbriefs.com/prillings

[35]-**(SEE-ABOVE)**-Resnick, J.A., Mann-Simmons, R. Stewart, and Holden Lane Perry (2013). Entitled: *"Next Generation Micro-Encapsulated Superior Rocket Fuel"*. The microscopic capabilities of the IMMI-(Infinite Microscopic- Macroscopic Imaging) Technology was microscopically able to examine this rocket fuel at less the 1.0-(nm)-(nanometers), and was able to help produce this rocket fuel by performing a microscopic study of fundamentals for the rocket fuel that allowed it to be studied at the molecular and atomic levels. Enabling this technology win third place. In the above paper under (Acknowledgements)- it reads as follows: **2.1 Acknowledgements-** The authors of this paper would like to thank all scientists and researchers for their research, "*and would like to thank Stewart Research 1.0-nm-(nano-meter) imaging studies"*. At- http://pluralidade.info/Pluralidade1_053_055.pdf . *It also helped the Rocket Fuel to win: "Third-Place" In NASA Tech Briefs-Win The Future Technology Contest" as a White Paper.*

IMMI and The (AM)- (Angstrom-Microscope) Used In Microscopic Imaging Studies In The Sciences and Technologies of: *"Micro-Encapsulation"* and *"The Study of Bees"*

[36]- Resnick, J., (2013). Entitled: *"Development of "L-TIP"; A New Delivery System Comprising of Microsphere, Nano spheres, and/ or Pico spheres made With Beeswax and*

Natural Fumigant Compounds For Function As A Low-Toxicity Integrated Pest Management Product". Published in: " Pluralidade". Edition #1, on page 8 of 143 it reads: *"While Stewart Research and Consulting initiated and completed micro-imaging studies to help identify pesticide residual pre and post pesticide residue pathologies within the American Bee population."* At- http://pluralidade.info/Pluralidade_1.html and at- http://pluralidade.info/Pluralidade1_001_005.pdf .

[37]- Spaulding, V.E. (2013). Entitled: "MOXIFLOXACIN HYDROCHLORIDE COMPOUND IMPURITIES MICROSCOPIC IMAGING STUDY". (Ronald Stewart used the (IMMI) technology which was also used to develop another invention by (Ronald Stewart), which is entitled: *"The Angstrom Microscope"*. Which is the world's most powerful microscope. In the pharmaceutical microscopic study at the (nano-meter) level was looked at for possible impurities. In the: " Acknowledgement" section of this paper it reads about (Ronald Stewart) using the:" Angstrom-Microscope" in this study.and reds as follows: **"Acknowledgements"-** The author of this paper would like to thank all researchers and scientists involved in the study of medical diseases and the pharmaceutical industry. Who for without their research papers like this one would not be possible, *and also like to thank the Stewart Research and Consulting for the pharmaceutical imaging video.* (Paper may be found at)- http://pluralidade.info/Pluralidade1_096_100.pdf .