

Alan V. Bray

Systems and Materials Research Corporation, Austin TX

### Professional History

Alan has worked in industry for 38 years. After receiving a PhD in physics he worked as a scientist, division manager, sector leader, and company president before forming his own company in 1998. He holds 11 patents in materials science and microwave nondestructive evaluation. He has won over 40 Phase I SBIR/STTRs, 12 Phase II SBIRs, over 20 commercial R&D contracts, and numerous broad agency announcement and sole source contracts. Honors include best paper awards for the Military Operations Research Society (MORS) and the Society for Advanced Materials and Process Engineering (SAMPE). He is an ardent fly fisherman, and has served as president of the Guadalupe Chapter of Trout Unlimited and the Austin Fly Fishers, and served on two TP&W advisory boards – Freshwater Fisheries and the Texas Rivers Board. He is the father of three smart and beautiful daughters, and grandfather of 6 super grandchildren. He currently serves as the Ex-Officio/Owner of Systems and Materials Research Corporation, where he still writes technical proposals and assists in marketing new work.

## Two SBIR Project Examples: Self-Sealed Fasteners and Train Distance Traveled

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MSEC Seminar

February 3<sup>rd</sup>, 2012

A joint materials project between SMRC and TX State to develop self-sealing fasteners is presented. The project was sponsored by NAVAIR. The recently patented technology is expected to solve some long standing problems in the aerospace industry. Fastener installation currently includes painting sealant on the fastener by hand one at a time, and re-mixing sealant every 10 fasteners. Realizing that modern aircraft have between 6 – 40 million fasteners each depending on size, the labor/time costs are significant. QwikSeal™ fasteners have sealant pre-installed, can be loaded into automatic riveting systems, and reduce the environmental footprint from over-application by depositing the same amount every time, also reducing aircraft weight.

A project to determine, to high accuracy, the distance traveled by a train using microwave and infrared sensors is presented. The project was sponsored by the Federal Railroad Administration, a department within DOT. The patented operational concept involves sensing track features such as rail ties and tie plates with down-looking sensors pairs aligned along the track length. As a feature is passed both sensors detect it, but separated in time with a small delay dependent on train speed. Correlation processing determines the time delay, which is used to compute a series of velocity estimates – one from each feature. These estimates are then integrated over time to obtain distance traveled. The noise environment in a real train/track scenario is significant, and filtering is important to achieving a high signal to noise ratio (SNR). Filter settings are speed dependent, and a tracking filter scheme is proposed to optimize SNR.

Starting a Tech Based Business – Are You Sure You Want to do this?

Alan V. Bray, Systems and Materials Research Corporation, Austin TX

Commercialization forum

February 3<sup>rd</sup>, 2012

All the things you thought would be easy about starting a small business usually turn out to be hard, and conversely! Presentation is focused on business start-up, and includes discussions on: Preparatory steps; Are you ready?; Easy stuff/hard stuff; Legal issues, Conflicts of interest; Registration/articles of incorporation; Corporate registration sources; Intellectual property (briefly); Tasks to complete in the first 10 days after incorporation; More early tasks; Early business moves; and Summary/advice. The nuts and bolts of starting a business in R&D and/or innovative product development are treated, along with anecdotal examples of what and what not to do.