Dr. Alexander E. Shapiro is a member of the AWS Brazing Committee, co-author of the Brazing Handbook and ASM Handbook, Brazing Q&A columnist of the Welding Journal, author of about 120 papers and patents in brazing, soldering, and composite materials. He also teaches Brazing Class in Ohio State University. His area of expertise includes brazing or soldering of titanium, titanium aluminides, magnesium, refractory metals, ceramics, cemented carbides, diamond, carbon-carbon composites, graphite and other advanced structural materials. Within the last 15 years, we performed many R&D and Process Development projects involved with design optimization of brazed joints, setting up serial brazing processes, testing and structure evaluation of new bonding materials, etc.

Applications of new brazing filler metals in the form of amorphous foils 50 microns thick for vacuum brazing of titanium alloys, graphite, and ceramics are discussed in the presentation. Brazed joints were evaluated by testing strength, microstructures, and sometimes phase compositions of base and filler metal interfaces.