

**Samuel R. Shortes**  
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**Education:**

BS Chemistry from Abilene Christian University 1957  
Graduate work University of Texas (Austin) 1958  
Graduate work North Texas University (Denton) 1967  
Various trade seminars, technical schools

**Professional Associations:**

- (1) Electrochemical Society
- (2) Instrument Society of America
- (3) American Chemical Society
- (4) International Society of Plasma Medicine, (founding member)

**Professional Accomplishments:**

- (1) Given papers and/or published in various technical societies.
- (2) Granted many domestic and foreign patents.
- (3) Selected by *R & D Magazine* for *development of one of the 100 most technologically significant new products of 1992*. This product was a microwave based chemical analyzer for which several patents were granted. Application in petroleum, chemical production--- component and reaction chemistry
- (4) Founder and president of various entrepreneurial ventures

**Employment:**

**2008 to present**

**Aurum Engraving**  
Co-founder, President/CEO

**2009 to present**

**Applied Plasma Sciences of Texas, Inc.**  
Co-founder, Director of Technology Development

**2008 to 2009**

**Fuelco, Inc.**

Position: Consulting Technical Director  
Task: Development of fuel efficiency technology

**1997 to present**

**Anderson-Remplex**

Founder Consulting/Product Development Firm  
Position: principal  
Tasks:

- (1) Product development in high frequency and microwave-based analytical equipment instrumentation
- (2) Expert witness in various intellectual property disputes
- (3) Invented semiconductor chip-based chemical sensor/analyzer (Patent applied for)
- (4) Marketing consulting

**1985-1997** (12 years, overlapped earlier company)

**Phase Dynamics, Inc.**

Position: Cofounder, Vice President

Tasks:

- (1) Co-invented technology (microwave based chemical analyzer) Is currently the standard of the petroleum industry for oil-water measurements
- (2) Established manufacturing facility
- (3) Established marketing/sales, manufacture representation network. Customer base include ARCO, Texaco, Exxon, Shell, DuPont, Dow, Merck. Distribution in Europe, Middle East, Asia, Russia, North American Continent
- (4) Brought to profitable status and remains a viable company.

**1975-1988** (13 years)

**Aurum Etchings** (precision photolithographic etching and plating service to industrial accounts)

Position: Founder/President

Precision etching (photolithographic) service based on integrated circuit, printed circuit, technology.

Primary engraving source to Colt Firearms, Remington Arms, Winchester Repeating Arms

**1959 - 1975** (16 years)

**Texas Instruments, Inc. of Richardson, Texas**

Position: **Member of Technical Research Staff**

Tasks:

- (1) Microwave semiconductor devices for radar and missile guidance systems. Involved developing crystal growing techniques and device fabrication technology for III-IV semiconductors. Current basis of military and civilian communication systems.
- (2) Compound semiconductor transistor, laser and light emitting diodes (LED) technology for fiber optic telecommunication applications.
- (3) *Forward Looking Infrared* (FLIR) for military night vision applications for military and finally current mammography imaging technology. Current basis of air and land night imaging systems for military and police work.
- (4) Developed of CCD imaging devices. This was the beginning of the solid state optical imaging device research done cooperatively with Bell Laboratories. Currently basis of all digital and video cameras.
- (5) Automated manufacturing technology for semiconductors processes--- Integrated Circuits

**1973 - 2000** (27 years, concurrent with other activities)

**Aurum Jewelry Manufacturing Company** Position: Co-founder, owner

Co-founded jewelry manufacturing company in Richardson.

Retail and wholesale; Mostly service to the trade. Clients included Zale's.

**1957-1959**

**General Electrodynamic, Inc. of Garland, Texas**

Position: **Technical Director**

Tasks:

- (1) Developed camera tube used in *Mariner IV Mission* that transmitted back the first pictures of Mars from space.
- (2) Developed camera target imaging tube used for Wall-Eye guided missiles.