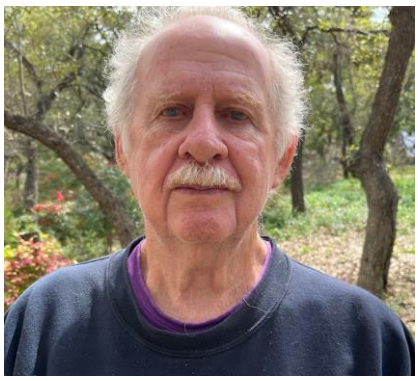
LM50017 - IEEE HOUSTON SECTION LIFE MEMBERS GROUP

TITLE: A Novel Semiconductor Process to Double Energy Efficiency in Photovoltaic Solar Cells

SPEAKER: Wesley H. Morris, Founder & President Silicon-X Corp, Austin, Texas.

DATE: Saturday, April 6, 2024

LOCATION: Spring Creek Barbeque Restaurant at 5935 HWY 6, North, Houston, TX 77084



Mr. Wesley H. Morris

ABSTRACT: TCAD simulation shows the PVC device metrics (such as Pmax and JSC output) can be increased by integrating SBGR into the PVC wafer during silicon manufacturing process. Also, with SBGR PVC the internal quantum efficiency (IQE) yield (KWh/day) doesn't decline with increasing wavelengths and as sun spectrum shifts from UV band to longer wavelengths in Visible and IR bands. And if solar field (sq-ft area is equal) the SBGR Panels will generate > 9X more KWh/day than conventional panels. This would enable Solar power miniaturization as the # of acres req could be reduced. And as more than 90% of the sun's energy comes from visible and IR band SBGR panels are more efficient and increases to 26.9%.

Background and Career EXPERIENCE

- RCA Princeton labs & PBG, Fla, RCA Rad Hard SOS CMOS Platform for RH device developments. (1981-1986).

- HARRIS Semiconductor Palm Bay, Fla
  - RH SOI device development (1986-1988).
  - SEMATECH consortium Austin, Tx (HARRIS Assignee), Process and Device Integration, Phase 2,3,4 wafer manufacturing tool developments. (1988-1993).

- (1993- 1995) founder Silicon Engineering Corp, TCAD services, SEMATECH, AMD and NCR (VMW Project).

- 1995-2003 Silicon Engineering Corp technology consultant for EATON Semi internal implant tool developments and global customers (SE ASIA, Korea, Japan, and Europe) supporting Eaton implant tech at global foundry wafer manufacturing fabs.

- 2004-2015 founder Silicon Space Technology Semiconductor. Product development and IP licensing for reliable CMOS devices applications in extreme environments (Radiation and High Temperatures to 250C).

- **Founder, President Silicon-X Corp, Austin, Texas**
  Mar 2018 - Present

- Member IEEE since 1984 and published papers at IEEE conferences.
- Co-Author: “INTEGRATED CIRCUIT DESIGN FOR RADIATION ENVIROMENTS” WILLEY BOOKS ISBN-13: 1119966340 in 2021.

EDUCATION: Florida State University
BS, Physics and Chemistry (dual) 1973 – 1977