Georgia Electronic Design Center

Distinguished Lecture Series

XBAW Technology – Enabling Next Generation Resonators and Filter Solutions – from MHz to GHz range applications

FEATURING
Abhay Kochhar
Staff Device Engineer
Akoustis Technologies, Inc.

Friday, September 30, 2022
11:00 a.m. to 12:00 p.m. EDT
Location: TSRB 118 Auditorium

Pizza & Soda Available Post Seminar

Abstract: Akoustis uses pioneering next-generation materials science to address market requirements for improved RF filters. Bulk acoustic wave (BAW) is the technology of choice for RF signal filtering in the range of 2 – 7 GHz. BAW technology enables small filter dimensions, leading to compact systems, improved design tradeoffs and lowered cost. High quality-factor (Q) of BAW resonators enables improved performance, notably lower passband loss and steeper filter skirts. In this talk, we showcase the capability and performance of resonators and filter solutions created using XBAW, a novel manufacturing process, capable of producing state-of-the-art BAW RF resonators and filters for WiFi, 5G infrastructure, 5G mobile, and defense/general applications. Using this XBAW wafer manufacturing process and a variety of advanced high purity piezoelectric AlN and AlScN thin films, RF filter solutions are created to address needed improvements in bandwidth, operating frequency and output power compared to incumbent BAW technology deployed today. Further, we present the capability of the XBAW wafer manufacturing platform to extend into the MHz frequency spectrum, by demonstrating high-performance Micro-Electro-Mechanical (MEMS) resonators, using various acoustic vibrational modes with improved AlN and AlScN piezoelectric materials. Finally, a brief introduction to XBAW Foundry services is presented, including BAW and MEMS devices offered by the XBAW process.

"State-of-the-art RF resonators and filters for Wi-Fi and 5G infrastructure"

Biography: Abhay Kochhar (S'11-M'13-SM'19) received B.E. from Nagpur University, India, M.Tech. from VNIT Nagpur, India, and Ph.D. from Tohoku University, Japan. From Oct 2013 – Sept 2015, he worked as a Postdoctoral Research Fellow with WPI-AIMR, Tohoku University. From Oct 2015 – Sep 2016, he was Postdoctoral Research Associate and during Oct 2016 – Apr 2019 he was Research Scientist, both with ECE department at Carnegie Mellon University, Pittsburgh, PA. Since May 2019, he is working at Akoustis Technologies, Inc., Huntersville, NC, where presently he is Staff Device Engineer. He was awarded Japanese Government (MEXT) Scholarship from 2010-2013. He has won the best paper award at IEEE International Ultrasonic Symposium in 2012. His research interests include microfabrication, hetero-integrated systems, piezoelectric materials for timing and filter applications, etc.

Hosts: Azadeh Ansari & Nima Ghalichechian