

**Course description:** Competition from solid state electronics combined with a ~120 year history of development can make it challenging to identify not only novel but meaningful research topics in vacuum electronics (VE) that enable further significant technology advancement beyond the already amazing state-of-the-art. This tutorial course provides illustrative examples of a process to identify not only innovative but also impactful VE research topics. The process starts with listening, reviewing literature, and identifying fruitful “knowledge gaps” that are roadblocks to advancement. Next step is to realistically evaluate what one can do with locally available infrastructure and expertise, combined with strategically leveraging collaborative partnerships to broaden one’s capabilities (many heads are better than one!). Then identify what tools, methods, and approaches are needed to investigate the research topic in a new way. Time-permitting, the session will end with a brief, small group active brainstorming exercise to crowdsource some potential new research ideas for participants to consider.