Tomography revolutionizing microelectronics and semiconductor analysis approach

Domenico MELLO - *EM Microelectronic*

In last years we are assisting a real revolution. The evolution of Artificial Intelligence (AI) and their introduction in the field of analysis has changed the rules of the game in many kinds analytical techniques such as tomography and in particularly in microelectronics applications.

Tomography was successfully applied in many fields of research such as medicine, biology, geology or earth science but in microelectronics its application is often limited at back-end issues. The recent evolution of the tools, the techniques and the use of new AI-based algorithms would make it extendable it also at the front-end. The main problem is that the flow of the tomography and u-tomography is indeed very complex and requires multiple skills. In addition, before the advent of AI, it was often not always possible to achieve the final result.

This technique coupled with correlative microscopy (CM) is revolutionizing traditional analysis workflows by moving the focus on data sets manipulation for problems identification and route causes determination. There are still steps to be taken to make the flow applicable in all possible conditions, but very soon we will see a real revolution, where a large amount of data is acquired in a relatively short time and the actual analysis part is done on the data set.

In this work we will take a brief overview of MC standards in the field of industrial semiconductors analysis and the new methodologies that are emerging. Then we introduce the need related to 3D with an examination of the u-tomography acquisition flow with the various challenges. Finally, we will consider case studies that will allow us to better understand how these new methodologies are revolutionizing the sector.