



Contribution ID: 14

Type: **not specified**

Growth and characterization of Chalcogenides-based compounds

Wednesday 15 October 2025 15:20 (20 minutes)

Phase change materials (PCM) are a class of materials mainly based on chalcogenides elements, with sharp differences in electrical and optical properties among crystalline and amorphous phase. These properties are widely exploited in various fields such as neuromorphic computing. Ge-Sb-Te based alloy (GST) is the most widespread compound used for the realization of devices; despite this, low crystallization temperature is a strong limitation for several applications. The effect of Titanium doping on variation of crystallization onset has been investigated for several Ti concentrations. Together with doping, novel Phase Change compounds have been investigated to overcome the aforementioned limitations. In-based PCM resulted in a group of interesting materials, in particular In-Ge-Te is a still unexplored alloy, so a structural characterization has been carried out, with a peculiar focus on the crystallization process.

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