

Perspectives of storage class memories in flexible edge electronics

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At now biomedical, automotive and aerospace fields are strongly driving the request for innovative technologies to ensure fast and safe data processing, along with power and cost efficiency. Besides, vital and time-sensitive tasks constrain to local data processing within edge computing architectures. However, the stability, the mechanical flexibility, the huge computational and storage requirements of these applications are beyond the capability of current embedded devices. A possible solution are computational memory devices based on phase-change materials (PCMs), to overcome the Von Neumann architecture storing data and carrying out calculations in loco, with a unique prospect of high performance and power efficiency. In line with the circular economy model, PCM-based devices can be fabricated with low cost technologies directly on flexible and large-area recyclable substrates. Recently, our research group identified a suitable PCM alloy, with excellent thermal stability and mechanical toughness. At last, the requirements and prospects of PCM alloys as active material in flexible memories for flexible edge electronics will be presented.