

Quo vadis?: Ion Beam Engineering and beyond...

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There is no doubt that ion beam based research and applications- like all semiconductor-based revolutionary developments of our society- have reached a kind of saturation overlooking the last 60 years when ion implantation started as a child of the early nuclear weapon development. It was the mass separator as a key part of the ion implanter allowing the formation of atomically pure beams. Doping of semiconductor materials with a clear dominance of silicon was the technology driver for the development of ion beam technology. Moreover, the physical and chemical modification of surfaces as well as regions in shallow and deeper regions below the surface of solid materials was the matter of interest for using this efficient tool. At all times, annealing/thermal treatment of ion beam treated materials within different time ranges –from hours down to picoseconds- was a close relative of ion beam engineering. Even flash lamp annealing as one of the annealing methods based on early experiments performed for the simulation of strong optical radiation impact on materials during nuclear weapon attacks. In this talk I will shortly discuss historical and future aspects of ion beam engineering to initiate a discussion on: From nuclear weapons to superchips..., what remains to be done? or, ...what more do people really need? I will extend this lecture to issues that should be of broader interest, but also, to our community!