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HZDR Ion Beam Center Activities for Industrial Collaboration and Innovation

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The HZDR Ion Beam Center (IBC) operates its facility as an international competence and user center for ion beam physics and applications providing all ions in an energy range between a few eV and almost 100 MeV. The available user beam time of about 14.400 h/a is shared between materials and interdisciplinary research work, but includes also a remarkable fraction of about 25% for collaborations and ion beam services to industrial partners. Collaborations with industry need specific conditions to foster bridges from research work to economic development and innovation and to enable sustainability. For that reason the ion beam services at IBC is delivered via the HZDR Innovation GmbH (HZDR spin-off from 2011) which cover all commercial, legal, quality management and liabilities issues.

The presentation will illustrate some activities how industrial exploitation of ion beam technologies contributes to product innovations. As one example, in a close collaboration with the manufacturer an ion microscope has been qualified for elemental analysis of surfaces with a lateral resolution well below 100 nm using ion scattering or mass spectrometry techniques. Such a spatial analytical resolution marks a remarkable step for ion beam analysis imaging techniques. Another activity is the extensive application of high-energy implantation/irradiation techniques to realize novel devices for power- or opto-electronics which is of significant importance for requested energy saving electronics.

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