

Depth resolving phase analysis of ion implanted stainless steel

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For a better understanding of the complex process of ion implantation the information on the composition in phases as a function of depth within the implanted area is needed. In the present work a high austenitic stainless steel of composition $\text{Fe}_{62}\text{Ni}_{20}\text{Cr}_{18}$ was implanted with 400 keV ^{151}Eu ions with different doses up to 1.2×10^{17} ions/cm². The depth profile of phases was determined by depth selective conversion electron Mossbauer spectroscopy (DCEMS). We observed a martensitic phase within a region of depth, that coincides with the elemental depth profile of the implanted Eu measured by Rutherford backscattering spectroscopy. Furthermore in connection with the DCEMS results the strong influence of adsorbate layers on the formation of the depth profile and phases will be discussed.