

Ar beam induced desorption from different materials at TSL

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This paper describes new experiments on the heavy ion desorption yield measurements with 5 MeV/u Ar⁸⁺ and summarizes all results of experiments with 5 MeV/u Ar⁸⁺ performed at The Svedberg Laboratory in Uppsala (Sweden). These results are important for the update and design of the FAIR facility at the GSI Helmholtz Centre for Heavy Ion Research in Darmstadt (Germany) where the required increase in beam intensity is limited by ion induced pressure instability.

It was shown that lowest desorption yields can be achieved with gold coatings, whereas grazing incident loss increases the desorption yield by roughly an order of magnitude compared to perpendicular loss. The desorption yield of saturated NEG samples was measured to be higher compared to any non pumping samples. The desorption yield of copper can be lower and higher compared to stainless steel depending on cleaning procedure and sample history. Additionally the secondary electron and ion yield was measured to be a few tens of electrons and ions emitted per projectile impact in backward direction. Their influence on the desorption yield due to secondary effects was less than 5% compared to the primary desorption by the high energetic projectile.