



Operational parameters of Liquid Metal Ion Sources in the laboratory and in a spaceborne SIMS instrument

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Liquid Metal Ion Sources (LMIS) are used in Secondary Ion Mass Spectrometers (SIMS) as primary ion sources. Such an indium ion source is used in the COSIMA instrument which is part of the science payload onboard Rosetta to comet 67P/Churyumov-Gerasimenko. For space applications, long time stability and reliability are the most important operational issues. In this contribution we are presenting results of measurements which are carried out in the laboratory and, in comparison, data from the COSIMA instrument operations onboard the Rosetta mission in the last four years. The ion source behavior and operational features will be discussed. We will present results of the ion source thermal analysis with the goal to understand the functionality of the LMIS thermal behavior. For further investigations, we intend to measure the emitted X-ray radiation due to accelerated electrons during the operation of the LMIS test source in our laboratory. These experiments are intended to show any elemental abundance alterations near the tip of the needle. First results of this setup will be presented.