

Improvements in the Production of ²²Na Positron Sources at iThemba LABS

C. Naidoo^{1,*}, R. Krause-Rehberg²

¹*iThemba Labs, Old Faure Road 1, Faure 7131, South Africa*

²*Univ. Halle, Inst. of Physics, 06099 Halle, Germany*

* email: clive@tlabs.ac.za

The poster shows the production of ²²Na at the iThemba Labs in Faure (near Cape Town) and the improvements recently obtained.

iThemba LABS has been producing ultra-high vacuum (UHV) ²²Na positron sources since the mid 1990's. Today, iThemba LABS is the only producer of these UHV ²²Na positron sources worldwide. These sources are produced by using the in-house produced high purity ²²Na radionuclide with a specification of >800 Ci ²²Na per gram of sodium together with the empty source capsules produced by Rehberg Electronics (Prof. Dr. Reinhard Krause-Rehberg) in Halle, Germany.

In the last quarter of 2014, we encountered a few problems from clients complaining about the low beta efficiency of the ²²Na positron sources. This paper will present the improvements made by Rehberg Electronics on the empty source capsule together with the improvements made by iThemba LABS on the dispensing of the ²²Na radionuclide during the manufacture of the ²²Na source capsule. Since the implementation of these improvements, the quality of the ²²Na positron sources has improved drastically and we have only received positive feedback from clients in this regard. In addition, upgrades of the current ²²Na production facility, the availability of the ²²Na stock levels together with the future vision of iThemba LABS will also be presented.