Improvements in the Production of $^{22}$Na Positron Sources at iThemba LABS

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

iThemba LABS has been producing ultra-high vacuum (UHV) 22-Na positron sources since the mid 1990’s. Today, iThemba LABS is the only producer of these UHV 22-Na positron sources worldwide. These sources are produced by using the in-house produced high purity 22-Na radionuclide with a specification of >800 Ci 22-Na 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 22-Na 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 22-Na radionuclide during the manufacture of the 22-Na source capsule. Since the implementation of these improvements, the quality of the 22-Na positron sources has improved drastically and we have only received positive feedback from clients in this regard. In addition, upgrades of the current 22-Na production facility, the availability of the 22-Na stock levels together with the future vision of iThemba LABS will also be presented.