Contribution ID: **214** Type: **Poster**

# Determination of pumping properties and surface resistance of quaternary alloy of non-evaporable getter of TiZrVCu

*Tuesday 19 June 2018 18:00 (20 minutes)*

Non Evaporable Getter (NEG) has been employed extensively in the particle accelerator especially where the conductance of the vessel is severely restricted and ultra-high vacuum condition is required. NEG coating will significantly reduce the rate of outgassing and at the same time provides active pumping surface for H2, CO and CO2. In addition, it has been proven that NEG coated surfaces have a very low secondary electron yield, as well as low photon stimulated desorption and electron stimulated desorption yields. However the existing NEG film increases the impedance of the beam pipe by an order of magnitude which can the beam pipe wakefield impedance.
In order to increase NEG conductivity, at ASTeC we have commenced to study alternative NEG composition by adding more conductive element such as copper. In this study, we report on the pumping properties, activation temperature, sticking probability (H, Co, CO2) and surface resistance Deterof new NEG quaternary alloy of TiVZrCu as function of the film structure, morphology, and composition.
Film bulk composition was determined using Rutherford Back Scattering RBS while the surface composition and surface chemical state as function of activation temperature was determined with X-ray photoelectron spectroscopy XPS. Surface structure and its morphology was determined by Scanning electron Microscope and X-ray driffraction.

**Primary author:** MALYSHEV, Oleg (STFC Daresbury Laboratory)

**Co-authors:** Mr SEIFY, Omid (STFC); Dr VALIZADEH, Reza (STFC); SIRVINSKAITE, Ruta (STFC); Dr DHANAK, Vinod (university of Liverpool); HANNAH, adrian (science technology facilities council)

**Presenter:** HANNAH, adrian (science technology facilities council)

**Session Classification:** Poster Session Tuesday

**Track Classification:** Vacuum Science & Technology