Contribution ID: **170**   Type: **Oral**

New multichannel modular detection system based on Silicon Drift Detectors

Thursday 18 February 2021 11:10 (20 minutes)

We present a detection system with high sensitivity and efficiency specially designed to exploit the potentials of X-ray absorption spectroscopy in fluorescence mode. It consists of 8 monolithic multipixel arrays, each with 8 (SDD) cells with a total area of 570 mm^2. Optimized to work in an energy range of 3-30 keV, this 64 channels integrated detection system includes ultra-low noise front-end electronics, dedicated acquisition system, digital filtering, temperature control and stabilization.

Room temperature characterization tests at Elettra Sincrotrone Trieste demonstrated very interesting results; they include an energy resolution at the Ka line of Mn 5.9 keV below 170 eV FWHM. The system is now installed and operating at the XRF-XAFS beam line of the SESAME Synchrotron light source in Jordan.

Primary author: CIRRINCIONE, Daniela (INFN-Ts)

Co-authors: ANTONELLI, Matias (INFN-Ts); AQUILANTI, Giuliana (Elettra Sincrotrone Trieste); BELLUTTI, Pierluigi (FBK); BERTUCCIO, Giuseppe (Politecnico di Milano); Dr BORGHI, Giacomo (FBK); CAUTERO, Giuseppe (Elettra Sincrotrone Trieste); FICORELLA, Francesco (FBK); GANDOLA, Massimo (Politecnico di Milano); GIURESSI, Dario (Elettra Sincrotrone Trieste); MELE, Filippo (Politecnico di Milano); MENK, Ralf Hendrik (Elettra Sincrotrone Trieste); OLIVI, Luca (Elettra Sincrotrone Trieste); ORZAN, Giulio (INFN-Ts); PICCIOTTO, Antonino (Fondazione Bruno Kessler-Micron Nano Facility); RACHEVSKI, Alexandre (Universita e INFN Trieste (IT)); RASHEVSKAYA, Irina (TIFPA); SAMMARTINI, Martina (Politecnico di Milano); STEBEL, Luigi (Elettra Sincrotrone Trieste); ZAMPA, Gianluigi (INFN - National Institute for Nuclear Physics); ZAMPA, Nicola (Universita e INFN Trieste (IT)); ZORZI, Nicola (Fondazione Bruno Kessler - FBK); Prof. VACCHI, Andrea (Infn)

Presenter: CIRRINCIONE, Daniela (INFN-Ts)

Session Classification: Session 10: Technologies and Applications

Track Classification: Technology and Applications