

# **Application and Development of SRF Technology at NSRRC**

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A 500-MHz superconducting radio frequency module has been operated in the electron storage ring at National Synchrotron Radiation Research Center, Taiwan. This accelerating cavity module is currently operated at a gap voltage of 1.6 MV for stored electron beam current of 300 mA, whereas 400 mA were demonstrated several times at machine test period. Together with transverse and longitudinal feedback systems and constant beam current operation, the users are highly satisfied with the beam performance. Although the SRF technology in NSRRC improves both the photon flux intensity and the stability, it also challenges the reliability and availability. Here the operational experience and status of SRF module at NSRRC are reported. Meanwhile, some SRF-related technologies to improve operation status of SRF module are in development at NSRRC. These improvements consist of mainly the RF technology, cryogenic engineering, mechanical engineering, and feedback systems. Currently an off-line multipactor processing technology and the elastoplastic buckling analysis on cavity structure are well-developed, whereas a liquid nitrogen phase separator with pressure regulation is to be tested soon. These developments are also presented in this report.