

8 - 11 Annual Report of RF Surface Technology Group

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1. General Information

RF Surface Technology Group (hereafter referred as “Surface Group”) belongs to the Linac center of Institute of Modern Physics. The primary goal for Surface group is to carry out the duty of SRF cavity processing and future SRF technology developing. The group was founded in August 2019 by 10 staff and 4 students. As of December 2021, the Surface Group had doubled its size to 23 staff and 10 students. In this report, the main progress on the major engineering project-related tasks will be presented. Progresses related to the research topics can be found on the other reports from the Surface Group.

2. Undertaking Engineering Duty from CAFe, HIAF and CiADS

In the year 2022, the Surface Group is operation 4 campus for cavity processing. Besides the Baiyin campus which was introduced in our last year’s report, 2 new campuses have become functional in this year. One of them is the Lanzhou New District Campus which hosts the state-of-the-art clean assembly facility, while the other is the Huizhou Head Quarter Campus which will process the first 4 cryomodules for CiADS and HIAF in 2023.

In 2022, 67 cavity BCP processes, 27 cavity EP processes, 31 vacuum annealing processes, and a good number of other miscellaneous processing jobs had been accomplished by the Surface Group at Baiyin campus, ensuring the smooth progressing CAFe-II project and the prototyping of HIAF and CIADS projects (Fig. 1).

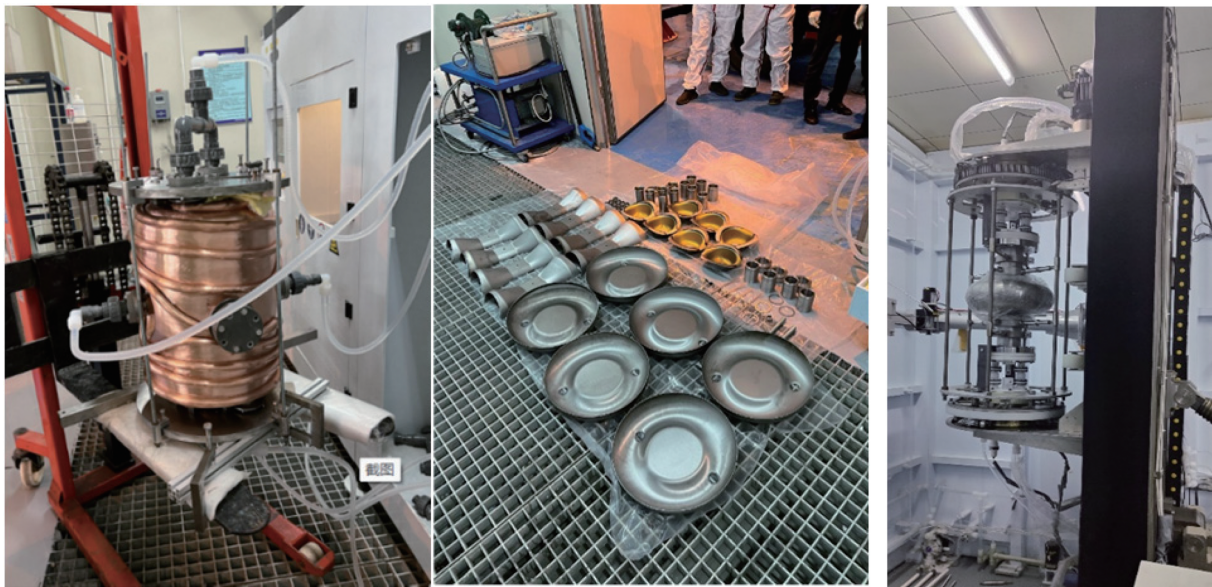


Fig. 1 (color online) The upgraded BCP system for Nb/Cu cavity (left), BCP for cavity parts (middle), and new EP system.

Meanwhile, the Surface Group is responsible for monitoring the construction of post-processing bases at the project site of HIAF and CiADS. The design for clean room and chemical processing system have been finished. The main processing building B06 is under construction.

3. Staff Training and SOPs

3 new members has been recruited in the post-processing team. Standard training procedures including safety training courses and technique training courses. Every fresh hand will be forced to take all the related safety training including hazardous chemical handling, in order to ensure everybody’s safety and health. Then, instead of knowing all post-processing processes like the existed member, new recruits will be assigned under certain tasks. This lowers the requirement for recruits’ background and learning time, and shortens the training period. So far, all 9 recruits have found their positions in the team and mastered certain skills.

This year, the post-processing team have issued 24 new SOPs for BCP, EP, annealing, and assembly. SOPs serve both for the personnel training and the project QC record. The Surface Group has completed SOPs for half of all processes based on successful experience and internal discussion. The construction and improving of SOP system will continue in the year of 2023.