

## Current status of the AIST slow positron facility

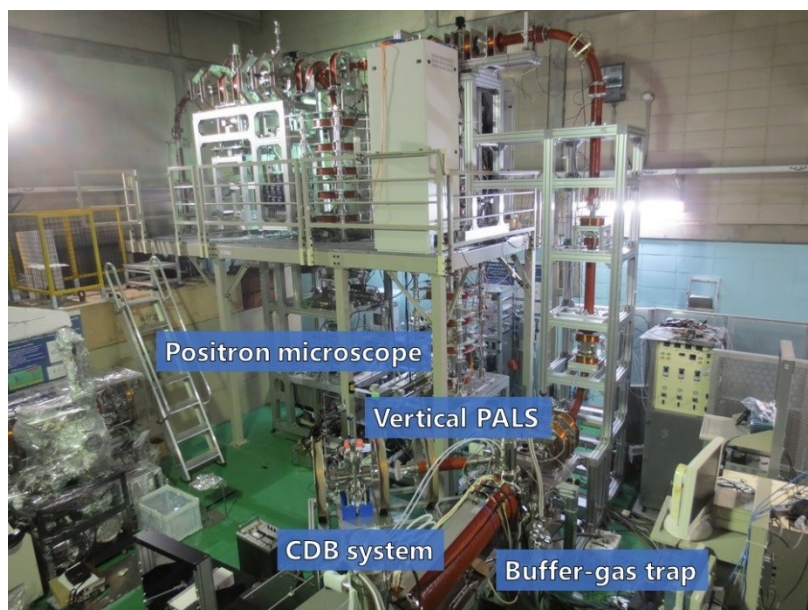
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The AIST (National Institute of Advanced Industrial Science and Technology) slow positron facility provides an intense slow positron beam generated by an electron LINAC. The positron beam is mainly used for materials research employing positron annihilation lifetime spectroscopy (PALS). To date, two beamlines have been installed: one is used for the standard PALS measurement with an energy-variable beam (1 - 30 keV) [1], while the second is used for the Positron Probe MicroAnalyzer (PPMA). The PPMA enables us to perform two-dimensional mapping of positron lifetime with micrometer spatial resolution ( $<100\mu\text{m}$ ) [2] and PALS measurements under atmospheric environment [3]. Both systems are arranged vertically to the ground, thus allowing the measurement of not only solid samples but also liquid and powder samples. The facility is open to external users through the "Nanotechnology Platform" project in Japan [4].

Recently, a new beamline was constructed to be compatible with new experimental fields. A coincidence Doppler broadening (CDB) measurement system and a buffer-gas trap, which can output nano-second positron bursts, will be developed with this beamline. The latter will be employed to demonstrate new positron experiments synchronized with laser sources.



**Figure 1** Overview of the slow positron facility at AIST.

### References

- [1] B. E. O'Rourke *et al.*, *JJAP Conf. Proc.* **2**, 011304 (2014).
- [1] N. Oshima *et al.*, *Appl. Phys. Lett.* **94**, 194104 (2009).
- [2] N. Oshima *et al.*, *Appl. Phys. Exp.* **4**, 066701 (2011).
- [3] [https://unit.aist.go.jp/rima/nanotech/ancf-index-en\\_28fy.html](https://unit.aist.go.jp/rima/nanotech/ancf-index-en_28fy.html)

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