Succeeded in In-house Development of a Waveguide-Type 1.5 THz HEB Mixer

For these years, our group has been developing the superconductive hot electron bolometer (HEB) mixer elements using NbTiN as a superconductive material for THz astronomy. Recently, we have succeeded in realizing a wave-guide type HEB mixer at 1.5 THz. Although the current DSB receiver noise temperature is 3000 K, it can readily be improved by reducing the size of the HEB mixer element. With this achievement, we can now fabricate the HEB mixer element in house, which would be an important step toward a project of THz astronomy from the ground based telescopes. This result will be presented in the International Symposium on Space Terahertz Technologies in April 2009 by Jiang and her collaborators.

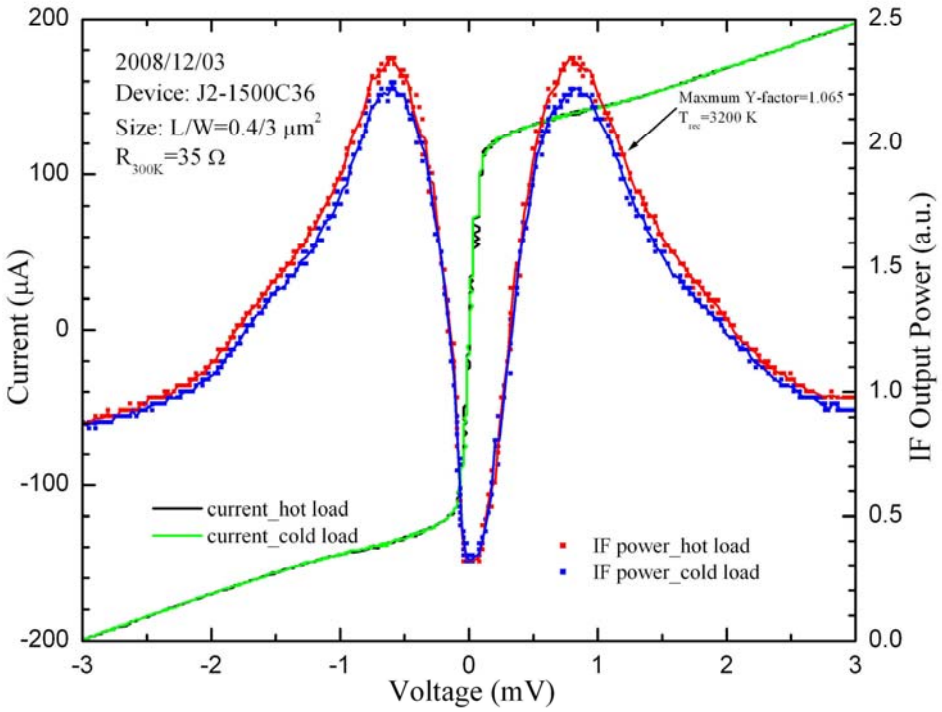

Figure 1 I-V curve and IF response of the waveguide 1.5 THz HEB mixer (Jiang et al.)