

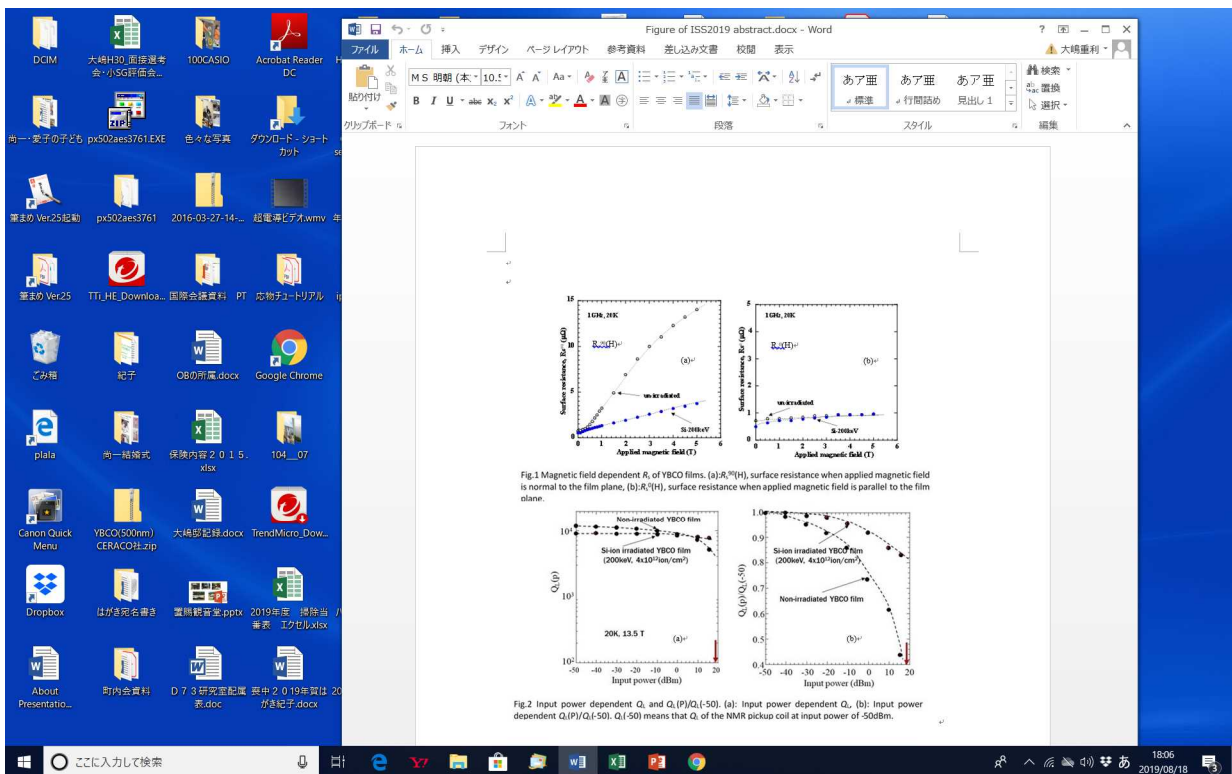
## ED6-4

# Required Characteristics of YBCO Thin Films to Fabricate High-Q NMR Pickup Coils

\*Shigetoshi Ohshima<sup>1</sup>

Graduated School of Science and Engineering, Yamagata University, Yonezawa, Japan<sup>1</sup>

The enhancement sensitivity of the NMR system is roughly classified into the following two methods. One is the development of a high frequency NMR system. Recently, a 1.3 GHz NMR development project has been carried out. The other is to increase the loaded quality factor ( $Q_L$ ) of the NMR pickup coil. In order to increase the  $Q_L$ , it is necessary to reduce the surface resistance ( $R_s$ ) of the pickup coil materials used under a high magnetic field, and superconducting films are useful for NMR pickup coil materials. We examined the  $R_s$  of the Si-ion irradiated YBCO films, and found that the YBCO films irradiated with Si ions have a small  $R_s$  <sup>90</sup>, and  $R_s^0$  in a high magnetic field (Fig.1). We fabricated the NMR pickup coils using the YBCO films with Si-ion irradiation and without Si-ion irradiation, and found that the NMR pickup coils made with Si ion irradiated YBCO films had large  $Q_L$  in high input power region (Fig.2).



Keywords: NMR pickup coil, surface resistance, Si-ion irradiation, YBCO film