

Ground-Based Simulation of Space Environmental Degradation with Duralumin through Proton Irradiation by MC-50 Cyclotron

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For the degradation effect of metallic material in space environment, A kind of duralumin is applied for proton irradiation that is generally used for the space mission. The experiments are performed to find the variation of quantitative values of property and the physical process of crystalline transformation. The ion beams are selected 7 MeV for low energy level and 27 MeV for high energy level. Each time for irradiation is calculated based on the Very Large August 1972 Event, which was the highest record of solar proton occurrence. The specimens are specifically prepared for the micro-analysis of comparison with macro-analysis and for covering the limitation of 15mm beam spot size. The proton beams are irradiated by *MC-50* cyclotron in KIRAMS(Korea Institute of Radiological & Medical Science). Due to micro-size specimen, *Tytron 250*, one of the micro-tensile system in KRISS(Korea Research Institute of Standards and Science) is utilized for proper adaptation. And other imaging and indirect element analyses are performed for more prominent data.