

## Dependence of TL-property changes on some radiation-defects in quartzes

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In some Si-Al substituted sites in quartz, Al-hole centers and trapped electrons can be formed according to radiation-exposure. Since thermal energy by heating treatment causes the liberation of trapped electrons, the recombination of electrons with holes is considered to produce the TL. However, there exists negative correlation between Al impurity concentration and BTL intensities among different segments from a single rock crystal as well as in the differently originated quartzes. Al-centers in ESR spectra have been examined by combining the annealing treatments using some quartzes. Thus, it was confirmed that hydrogen radicals derived from radiolysis of OH-related impurities could operate as a killer of radiation-induced Al-centers, associated to both BTL and RTL from quartzes.