^{96}Tc[4.35d], ^{99m}Tc[6h], ^{101}Tc[14m], ^{102}Tc[5.3s] and ^{105}Tc[7.6m] were identified until 1943 as the reaction products with deutron or neutron, as fission products and as daughter nuclides of molybdenum istopes. From 1946 to the end of 1950', along with long-lived ones such as ^{97}Tc[2.6×10^{6} y], ^{98}Tc[4.2×10^{6} y] and ^{99}Tc [2.1×10^{5} y], the following isotopes were identified; ^{92}Tc[4.4m], ^{93m} Tc[43.5m], ^{94m}Tc[52.5m], ^{95}Tc[20h], ^{96m}Tc[51.5m], ^{100}Tc[15.8s], ^{102m}Tc[4.36m], ^{103}Tc[50s] and ^{104}Tc[18m]. After 1963 through 1974, other than ^{94}Tc[293m], short-lived isotopes such as ^{90}Tc[50s, 7.9s], ^{91}Tc[3.3m, 3.15m], ^{106}Tc[36s], ^{107}Tc[21.2s], ^{108}Tc[5.17s], ^{109}Tc[1.4s] and ^{110}Tc[0.82s] were identified. The study of these isotopes on their nuclear characteristics have been reported and also several nuclear reactions were studied together with recoil effects of reaction product. The interesting study as for the influences of the chemical state on the life time of ^{99m}Tc have been made since 1952, because the decay constant of this isomer is determined mainly by internal conversion of 2-keV transition. [3][5]

3) Various chemical and physical studies for Tc started after fractional milligram of ^{99}Tc was separated in 1947 from neutron irradiated molybdenum and milligrams of fission-product Tc was obtained in 1948 from several kilograms of uranium irradiated in the ORNL nuclear reactor. In 1952, the gram amount of this element was isolated from "Redox" process waste. In this separation procedure, precipitation of pertechnetate ion with tetraphenylarsonium chloride was used with volatilization method followed by the insoluble acid-sulfide precipitation. During 1950', as for metal state of Tc, many physical properties (atomic weight, structure, density, electric resistance, melting point, magnetic susceptibilty, emmisson and X ray spectrum, superconductivity at low temperatures) were found and also the chemistry of Tc compounds of various oxidation states (+7, 6, 5, 4, 3) and their comparisons with that for manganese and rhenium were studied. Along with these, analytical separation methods have developed by solvent extraction and ion-exchange chromatographic method especially for minute amountsof Tc in the environment. For quantitative determination, spectrophotometric method was applied for μg level Tc and until 1960', radioactivity countings were carried out mostly with GM or β-proportional counters for β-ray emitters and also with γ-scitillation or X-ray proportional counters for γ-ray or X-ray emitters which decay by isomeric or electron capture transition. However, since 1970', solid state semi-conductor(Si or Ge) detectors and liquid scitillation counter were developed and now the measurements are widely made by using these counters. And since the middle of 1980', inductively coupled plasma mass spectrometry(ICP-MS) was introduced as very sensitive method for long-lived isotopes. Furthermore, resonance ionization mass spectrometry(RIMS) was reported as a more sensitive method for ultra trace analysis of Tc. The neutron activation analysis of ^{99}Tc was also studied. [4][5][9]

4) Technetium has various aspects of application. Inhibitation of corrosion for iron and steel by the pertechnetate ion was firstly reported in 1955 and the applications of technetium alloy to several technological field were reported in the beginning of 1960'. And now ^{99m}Tc is widely used medically for diagnosis due to its unique features of half-life(6 h) and appropriate energy(140 keV) of