

NEW SYNTHESIS METHODS OF DEACARBONYL DITECHNETIUM-99

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Also $M_2(CO)_{10}$ ($M = Re, Mn$) are precursors in many reactions, including the synthesis of metal cluster compounds, their analog, $^{99}Tc_2(CO)_{10}$, remains poorly studied. This is probably due to the complexity of its preparation: the synthesis of $^{99}Tc_2(CO)_{10}$ requires so far high pressure of a carbon monoxide (up to 350 atm) and a temperature of 220°C [1]. It is known that, salts of technetium acid - pertechnetates, as well as technetium dioxide are used as starting compounds for preparing $^{99}Tc_2(CO)_{10}$. However, the yield of $^{99}Tc_2(CO)_{10}$ prepared from these precursors is not high probably due to their low solubility in organic solvents.

In this work, we prepared ditechtnetium decacarbonyl from a solution of $HTcO_4$, in 1,4-dioxane, 1,2-dimethoxyethane and tetrahydrofuran. The synthesis parameters (temperature, time) were optimized. The highest yield (70%) of $^{99}Tc_2(CO)_{10}$ was obtained with 1,2-dimethoxyethane. The product was characterized by IR spectroscopy.

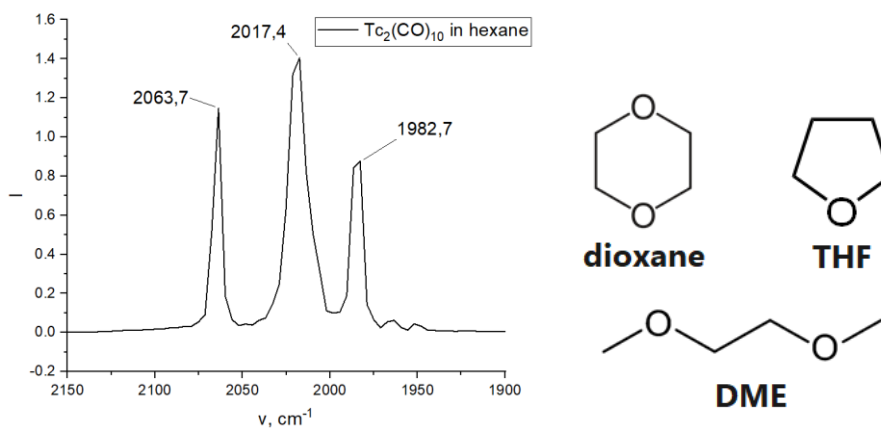


Figure 1. The IR spectrum of decacarbonyl ditechtnetium in hexane and solvents used.

References

[1] *J. Am. Chem. Soc.* **1961**, 83, 2953