**Study of Complexation Process between Kryptofix 5 with**$ UO\_{2}^{2+} $**and** $ZrO^{2+ }$**Cations in Some Binary Mixed Solvents.**

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The coplexation reactions between Kryptofix 5 with $UO\_{2}^{2+}$and$ ZrO^{2+}$ $cations$ were studied in tetrahydrofuran-methanol (THF-MeOH), tetrahydrofuran-acetonitrile (THF-AN) and tetrahydrofuran-dimethylformamide (THF-DMF) binary solvent solutions at different temperatures using conductometric method. The obtained results show that in most cases, the stoichiometry of the complexes formed between the ligand and the cations is 1:1 [M:L], but in some of the solvent systems, in addition of formation of [ML] complexes, 1:2 [M:L2] complexes are formed in solutions. The stability order of (Kryptofix 5.UO2)2+ complex in the binary mixed solvents with 50 mol % of THF was found to be: (THF-AN) > (THF-MeOH) > (THF-DMF) ,but the sequence of the stability of complexes changes with the composition of the mixed solvents and also with temperatures. The values of thermodynamic quantities for the complexation reactions,were determined from temperature dependence of the stability constants of the 1:1 [ML] complexes and it was found that the complexation processes depending on the solvent system are athermic or exothermic and in most cases, positive values characterized the formation of the complexes .

**Keywords** Complaxation; Conductometric; Kryptofix 5; $UO\_{2}^{2+}$ and $ZrO^{2+}$ cations