X-RAY STUDY OF RHODIUM(III) SULFATES

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Compounds with compositions $[Rh(H_2O)_6]_2(SO_4)_3 \cdot 4H_2O$ (**I**), $(H_3O)[Rh(H_2O)_6](SO_4)_2$ (**II**), $[Rh(H_2O)_5OH](SO_4) \cdot 0.5H_2O$ (**III**), and $[Rh(H_2O)_6]_2(SO_4) \cdot (H_2SO_4)_x \cdot 5H_2O$ (**IV**) have been studied. The crystal structures of **II**, **III**, and **IV** were determined. All compounds crystallized in the monoclinic crystal system. Crystal data for **II**: $a = 7.279(2)$ Å, $b = 10.512(7)$ Å, $c = 15.806(3)$ Å, $\beta = 96.71(3)°$, space group $P2_1/n$, $Z = 2$, $d_{calc} = 2.334$ g/cm^3; **III**: $a = 20.433(4)$ Å, $b = 7.820(2)$ Å, $c = 11.215(2)$ Å, $\beta = 114.14(1)°$, space group $C2/c$, $Z = 8$, $d_{calc} = 2.559$ g/cm^3; **IV**: $a = 6.2250(4$ Å), $b = 27.0270(12)$ Å, $c = 7.2674(5)$ Å, $\beta = 97.04(3)°$, space group $P2_1/c$, $Z = 4$, $d_{calc} = 2.143$ g/cm^3. The compounds were studied by IR spectroscopy and powder X-ray diffraction. All of the isolated crystalline phases are sparingly soluble in ethanol and well soluble in water.

Keywords: rhodium, sulfates, aqua complexes, coordination compounds, crystal structure.