

LETTERS TO THE EDITOR

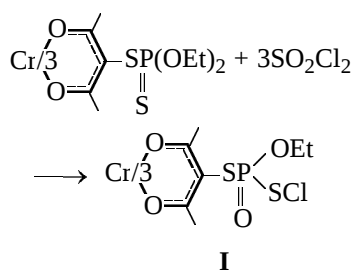
Synthesis of Chlorosulfonylphosphorylthio-Substituted Chromium(III) Acetylacetonate and Its Addition to Olefins

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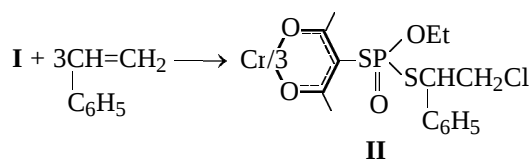
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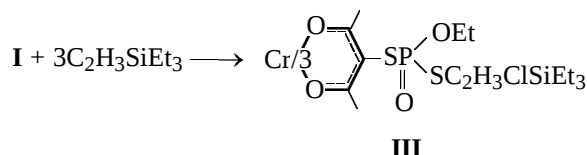
In this study, we prepared previously unknown chlorosulfonylphosphorylthio-substituted chromium(III) acetylacetonate by the reaction of chromium tris[(diethoxythiophosphorylthio)acetylacetonate] with sulfonyl chloride. The reaction was performed in benzene at 0–5°C for 1 h and yielded tris[3-ethoxy(chlorosulfonyl)phosphorylthio-2,4-pentanedionato]chromium **I**.



It was found previously that phosphorus-substituted sulfonyl chlorides readily enter into addition reactions [1]. The reaction of **I** with styrene was performed in CCl_4 at 0–5°C and yielded chromium complex **II**.



With triethylvinylsilane, complex **I** reacts similarly to form complex **III**.



The compositions and structures of all the compounds obtained were confirmed by elemental analysis and IR spectroscopy.

Tris[3-ethoxy(chlorosulfonyl)phosphorylthio-2,4-pentanedionato]chromium **I.** Yield 82%, light brown substance (after recrystallization). IR spectrum, ν , cm^{-1} : 1554 (C=O). Found, %: C 26.9; Cl 12.0; Cr 5.4; S 20.6. $\text{C}_{21}\text{H}_{32}\text{Cl}_3\text{CrO}_{12}\text{P}_3\text{S}_6$. Calculated, %: C 27.4; Cl 11.6; Cr 5.6; S 20.8.

Tris[3-ethoxy(2-chloro-1-phenylethylthio)phosphorylthio-2,4-pentanedionato]chromium **II.** Yield 55%, violet substance (after reprecipitation). IR spectrum, ν , cm^{-1} : 1552 (C=O). Found, %: C 43.9; Cl 8.2; Cr 3.9; S 15.2. $\text{C}_{45}\text{H}_{57}\text{Cl}_3\text{CrO}_{12}\text{P}_3\text{S}_6$. Calculated, %: C 43.8; Cl 8.6; Cr 4.2; S 15.6.

Tris[3-ethoxy(triethylsilylchloroethylthio)phosphorylthio-2,4-pentanedionato]chromium **III.** Yield 63%. IR spectrum, ν , cm^{-1} : 1551 (C=O). Found, %: C 39.8; Cl 9.0; Cr 3.6; S 13.6. $\text{C}_{45}\text{H}_{87}\text{Cl}_3\text{CrO}_{12}\text{P}_3\text{S}_6$. Calculated, %: C 40.1; Cl 8.6; Cr 3.9; S 14.2.

The IR spectra were recorded on a Perkin–Elmer Spectrum 1000 spectrometer (KBr pellets or thin films).

REFERENCES

1. Kutyrev, G.A., Vinokurov, A.N., Cherkasov, R.A., and Pudovik, A.N., *Dokl. Akad. Nauk SSSR*, 1980, vol. 252, no. 5, p. 1138.