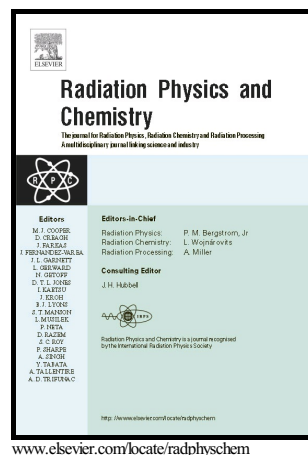


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Sulfur transfer in the distillate fractions of Arabian crude oils under gamma-irradiation

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Abstract

Desulfurization of light distillation fractions including gasoline, kerosene and diesel obtained from the four Arabian crude oils (heavy, medium, light and extra light) upon γ -rays irradiation to different doses was investigated. In addition, yields vol. %, FTIR analysis, kinematic viscosity and density of all distillation fractions of irradiated crude oils were evaluated. Limited radiation-induced desulfurization of those fractions was observed up to an irradiation dose of 200 kGy. FTIR analysis of those fractions indicates the absence of oxidized sulfur compounds, represented by S=O of sulfone group, indicating that γ -irradiation of the Arabian crude oils at normal conditions does not induce an oxidative desulfurization in those distillation fractions. Radiation-induced sulfur transfer decreases by 28.56% and increases in total sulfur by 16.8% in Arabian extra light oil and Arabian medium crude oil respectively.

Keywords: Arabian crude oils, Desulfurization, Distillation fractions, Gamma radiation.

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