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Photochemical Processes and Accumulation of Solar Energy in Oil Luminophors

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Abstract: Using the methods of absorption spectroscopy, luminescence and EPR there has been studied the mechanism of solar energy accumulation by high boiling products of oil refining and by luminophors prepared on their basis within wide temperature range (77-550 K). The photochemical processes with participation of all main components of oil products and luminophors have been considered. The mechanisms of accumulation of solar energy of the studied products and luminophors have been considered. The mechanism of accumulation of solar energy of the studied products prior and above their pour points have been found to differ significantly. The light energy accumulation and its thermal luminescence have been established to occur with participation of free radicals, ions, peroxides and tetraoxides. It has been shown that low-temperature recombination luminescence takes place only by two-photon process, but photochemoluminescence-both by one photon and two-photon processes.

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