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Brightness Temperature and Physical-Chemical Transformation of Epoxy Resin under Shock Compression SERGEY A. BORDZILOVSKII, SERGEY M. KARAKHANOV, LIH SB RAS, Novosibirsk, Russia, KONSTANTIN V. KHISHCHENKO, JIHT RAS, Moscow, Russia — The interest in properties of polymers at high pressure and temperature arises from their applications as structural materials in shock-wave experiments. In particular, the optical characteristics of some polymers make it possible to use those as window materials in pyrometric measurements and in VISAR technique. In the present work, we investigate the spectral radiance, which is registered in the direction of shock propagation through the epoxy EC141NF samples loaded to the pressure in the range from 19 to 42 GPa. The brightness temperature of the shocked epoxy EC141NF was measured by the optical pyrometer. Experimental points are in agreement with equation-of-state results within the limits of the error. The conclusion about the absence of the chemical transformation in the epoxy at the pressure 22.5 GPa during the observation time was drawn basing on the registered particle velocity profiles.

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