

## Analytical description of the alkaline metals melts density and calculation of it for francium

© Ivan K. Garkushin,\*<sup>†</sup> Olga V. Lavrenteva, and Yana A. Andreeva

Department of General and Inorganic Chemistry. Samara State Technical University.

Molodogvardeyskaya St., 244. Samara, 443100. Samara Region. Russia.

Phone: +7 (846) 278-44-77. E-mail: gik49@yandex.ru

\*Supervising author; <sup>†</sup>Corresponding author

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### Abstract

At present, the description of properties for elements, simple substances and individual chemical compounds remains relevant for clarification of available in reference literature physicochemical characteristics and prediction of unknown data. In this paper, analytical description of the density are given for alkali metals melts being a constituent in modern thermofors. The isothermic and polythermic methods, the Karapetyans's comparative method, the Mendeleev's method are used for the description and prediction. An analysis of the relationship between absolute and reduced ( $\rho/Z$ ) density of  $s^1$ -elements and temperature are presented. Also an analysis is given for the relationship of density with melting temperature and temperature, above melting temperature on  $n = 5, 10, 50, 75, 100, 150, 200$  K. The dependence  $\rho = f(Z)$  ( $Z - s^1$ -elements order number) is described analytically and graphically. The dependence  $\rho = f(Z)$  ( $Z - s^1$ -elements order number) is described analytically and graphically. The dependence of the relationship between density in the liquid and solid state is described in the coordinates "property 1– property 2". On the basis of the analysis the francium density are predicted. Recommendations are given for using analytical dependencies with the maximum correlation coefficient and the minimum standard deviation for the prediction.

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- ANALYTICAL DESCRIPTION OF THE ALKALINE METALS MELTS DENSITY AND CALCULATION...* \_\_\_\_\_ 92-101  
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