ABOUT ROUND DATES, ACUTE QUESTIONS AND SOLVING PROBLEMS OF LOW-PARAMETRIC EQUATIONS OF STATE BY LOGICAL ABDUCTION

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It is generally recognized that the ancestor of one of the two directions in the construction of the equations of state (ES) – low-parametric and multi-constant – is the work, model and the ES of Van der Waals. The famous ES (his author got a Nobel Prize) in five years will "hit" 150. During this time hundreds of modifications of the Van der Waals ES were proposed, but Redlich-Kwong ES stands out among them (in 2019 he will be 70 years old). Restoring the extinct interest in the work of Van der Waals, their ES created a lot of important modifications (Soave-Redlich-Kwong, Peng-Robinson, Schmidt-Wenzel, Usdin, McAuliffe), which age is also significant: 45 – 40 years. However, despite the known successes, the problem of creating the optimal low-parametric ES does not solved yet.

There are many questions to such low-parametric ES. One of the first are about number of parameters in the famous "two-parametric" ES, about the meaning of the parameter b of different ES, the meaning of the third parameter and the molecular model that customary associated with these ES. The undefined meaning of the parameters leads to the main disadvantage of the ES vdw-type, which is their weak connection with the microlevel. Making a conclusion the advantages of the new ES (thermodynamic-level model), authors usually do not touch upon the reasons and do not link it with changes of the molecular-level model.

The situation responds to the method of logical abduction. There are questions that cannot be resolved within the framework of the current model. If problems within the framework of the new model can be solved, this means its adequacy. The new molecular-thermodynamic model built by us. It based on the simplest micromodel – the interacting point centers. Families of low-parameter physically grounded realistic thermal equations of state (PGRTES) were obtained. Within the framework of this model, it is possible to receive answers to many questions that are available in the ES of vdw-type that means the adequacy of the new ES. It should be noted that the ES of the interacting point centers will be 10 years next year (see our work at `www.csmos.ru`).