

# IT modeling technologies of credible rocket propellants in liquid rocket engines processes

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*The paper presents the IT-technology TDSOFTRG based on a function superposition of DLL library CTDsoftRG.dll and Microsoft Excel system, which was developed for thermodynamic simulation of LRE processes. The real gas state equation was used. It is shown that the problem of computing the equilibrium composition of multispecies reacting mixtures in general case is an extremum problem of nonconvex programming. Using the terminology of spaces provides feasibility of using methods and means of linear and non-linear programming if the equivalent statement is available. While comparing the computational results obtained for air and the published data it was shown that this IT-technology yields reliable and valid results at high speed.*

**Keywords:** *DLL library; thermodynamics of multispecies mixtures; real gas state equation; virial coefficient; extremum problems; linear, convex, and nonconvex programming; adequacy of computation results of the problem.*

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