

Implementation of Literature Data Capture Procedures within the NIST/TRC Data Entry Facility for Russian and Chinese Publications

Ilmutdin Abdulagatov^{C,S}

Thermophysical Properties Division, National Institute of Standards and Technology, Boulder, CO, U.S.A.

Jiangtao Wu

Xi'an Jiaotong University, Xi'an, China

Zhenya Ustujanin and Boris Reutov

Moscow Power Engineering Institute, Department of Thermophysical Engineering, Moscow, Russia

Robert D. Chirico and Michael Frenkel

Thermophysical Properties Division, National Institute of Standards and Technology, Boulder, CO, U.S.A.

Using NIST/TRC (USA) data capture software (Guided Data Capture, GDC) we have implemented data capture procedures for thermophysical and thermochemical properties of pure compounds, binary and ternary mixtures, and chemical reactions for 22 Russian and 51 Chinese major scientific journals and deposit papers. All captured thermophysical data (1325 Russian GDC files and 731 Chinese GDC files) were loaded into the TRC/NIST SOURCE Data Archival System. The reliability and the quality (the expert analysis, critical evaluation of the captured data) of the various thermophysical data sources published in Russian and Chinese journals were checked with ThermoData Engine (TDE, dynamic data evaluation system for thermophysical properties data) software developed at Thermodynamic Research Center (TRC) of the National Institute of Standards and Technology (NIST). The uncertainty analysis, error checking with error detection procedure (TDE software) and critical evaluation of the data for each captured thermophysical data source were performed. The detected errors (typos, unit errors, hidden errors, erroneous compound identification, thermodynamic inconsistency, missing units, uncertainty, method of measurements, etc.) were corrected and improved in the SOURCE archive. We found that approximately 20 % all of the published articles include typographical errors in the tables of experimental data. This project makes accessible all of the important Russian and Chinese thermophysical data sources for worldwide users of the ThermoData Engine technology. Currently the data capture is complete for Russian journals published between 1950 and 1980 and for Chinese journals from 1980 to 2009. Data capture, checking, and loading to the SOURCE archive continues. This work is a part of the long-term collaboration project between NIST/TRC, Moscow Power Engineering Institute (Russian), and Xi'an Jiaotong University (China).