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Solder Alloys Data Mining for Materials Research

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Experimental data on filler metals is required in material science applications ranging from welding regime selection to numerical modelling of soldered joints behaviour. However, high-quality quantitative data is time-, cost-, and labour-intensive to produce.The present work proposes a method for the automated processing of full-text PDF articles in the field of material science that leverages visual, tabular, and textual data extraction techniques developed by the authors to obtain standardized representations of a selection of objects, thereby increasing the efficiency of technical data utilization. An integrative software tool built upon the method is discussed. The metrics of precision (63-99%) and recall (90-99%) calculated to assess tool performance prove the applicability of the solution proposed for domain-specific data aggregation, unification, search and management, and the potential for usage in science analytics systems.

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