**“Machine learning approaches to predicting Hansen Solubility Parameters for polymers”**

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**Abstract**

Despite their long history of proven value in the coatings, pharmaceutical, and even structural materials industries, Hansen Solubility Parameters for all but the most common polymeric materials remain relatively scarce. Although numerous methods exist for calculating the Hansen Solubility Parameters of small molecules, or the total solubility parameter for polymers, comparatively little recent work in the computation of Hansen Solubility Parameters for polymers has been undertaken. The use of modern machine learning approaches represents a promising approach to predicting Hansen Solubility Parameters, but to date has been limited by the small number of polymers for which experimental data is available, as well as by the ambiguous nature of the chemical structure of many commercially important polymers. The use of “adjacent” experimental data, such as Hansen Solubility Parameters for small molecules, or Hildebrand Solubility Parameters for polymers, is explored as a means of overcoming these limitations.

