**عنوان مقاله:**

Modeling of Taguchi based MANFIS Method to Investigate the Performance of Batch Emulsion Polymerization of Vinyl Chloride

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**خلاصه مقاله:**

A novel ANFIS –based method is implemented to predict and model the batch emulsion polymerization of PVC using processing parameters and investigating its coaligative properties. The model identifies a specified desired multi input –multi output (MIMO) from a large number of input parameters. Also, artificial neural network (ANN) have emerged as one of the most useful artificial intelligence (AI) concepts used in various engineering applications. ANN can deal with non-linear modeling to investigate the errors in the system. The concept of multi adaptive neuro –fuzzy inference system (MANFIS) is not new as a research methodology but new in prediction of the coaligative properties of emulsion polymerization of polyvinyl chloride (PVC) .The experimental data supports the coaligative properties and provide information to parameterize the model. According to our model, we predict the ploydispersity index (PDI) ,molecular weight (Mw), etc. The input data include: temperature (T), water to monomer weight ratio (r), concentrations of initiator ([I]) and emulsifier ([E]), and agitation speed (S). We could obtain the least root mean square errors (RMSE) and the best regression (R2), which shows that the model has a good accuracy and is trained well; and more over it has the ability to be extended for various applications.

**کلمات کلیدی:**

PVC, Emulsion Polymerization, MANFIS, ANN, FL

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