Drying Characteristics of Shrimp by Using the Traditional Method of Oven

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Abstract : In this study, the drying characteristics of shrimp are studied by using the traditional drying method of oven. Drying temperatures are selected between 60-80°C. Obtained experimental drying results are applied to eleven mathematical models of Alibas, Aghbashlo et al., Henderson and Pabis, Jena and Das, Lewis, Logaritmic, Midilli and Kucuk, Page, Parabolic, Wang and Singh and Weibull. The best model was selected as parabolic based on the highest coefficient of determination (R^2) (0.999990 at 80°C) and the lowest χ^2 (0.000002 at 80°C), and the lowest root mean square error (RMSE) (0.000976 at 80°C) values are compared to other models. The effective moisture diffusivity (D_{eff}) values were calculated using the Fick's second law's cylindrical coordinate approximation and are found between 6.61×10^{-8} and 6.66×10^{-7} m²/s. The activation energy (E_a) was calculated using modified form of Arrhenius equation and is found as 18.315 kW/kg.

Keywords : activation energy, drying, effective moisture diffusivity, modelling, oven, shrimp

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