

(54) Title of the invention : SYSTEM AND METHOD FOR ENHANCING EVAPORATION RATE OF MULTI COMPONENT DROPS BY ACOUSTIC STREAMING

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(57) Abstract :

The present invention relates to a system and a method for enhancing the evaporation rate of a multi component drop (4) by suppressing the oscillatory circulation (2) there within, by using a low frequency acoustic streaming (3). The acoustic signal generated at an acoustic source (1), is a sine wave of different frequencies at constant amplitude, with and without added white noise. Minimum acoustic boundary layer thickness and maximum evaporation rate are observed at lowest acoustic frequency of 30 Hz, with and without, added white noise. The presence of intense acoustic streaming (3) around the evaporating drop (4) creates large velocity gradients on the drop surface due to higher air entrainment from the surroundings at low acoustic frequencies. It sweeps out more amount of evaporated mass from the surrounding of drop (4) and augments the heat and mass transfer from the drop surface. The higher rate of air entrainment into the drop (4), suppresses the oscillatory behavior of internal circulation (2), thus the enhancement of evaporation rate in multi-component drops arises, for all the multi-component drops.

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