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▶ **To cite this version:**

Magdalena Kristiawan, Vaclav Sobolik, Mazen Al Haddad, Karim Allaf. DIC process for treatment of organic materials. International Workshop on Process Intensification in Fluid and Particle Engineering, Oct 2006, Kobe, Japan. Chemical Engineering of Japan, Journal of Chemical Engineering of Japan, 40, pp.1021-1029, 2006, Isolation of Indonesian Cananga Oil by Instantaneous Controlled Pressure Drop: Influence of Processing Parameters on Compound Yields. hal-02754479

HAL Id: hal-02754479
https://hal.inrae.fr/hal-02754479

Submitted on 3 Jun 2020

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C5. Int. Workshop on Process Intensification in Fluid and Particle Engng., Kobe University, Japan, Oct.15-18 2006, Abstract

Full text article was published in Journal of Chemical Engineering of Japan:
KRISTIAWAN M., SOBOLIK V., ALLAF K.: Isolation of Indonesian Cananga Oil by Instantaneous Controlled Pressure Drop: Influence of Processing Parameters on Compound Yields. Journal of Chemical Engineering of Japan. 40(11), 1021-1029 (2007).

DIC process for treatment of organic materials

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Abstract
A new process for material texturing, instantaneous controlled pressure drop (DIC), consists in heating wet materials in an autoclave, followed by a fast expansion ($\Delta P/\Delta t > 2.10^5$ Pa/s) into a pressure lower than the atmospheric one (5 kPa). The vapour, which evolves due to the rapid pressure drop, mechanically strains the material. This stress creates porous structures, breaks the cells and destroys micro-organisms. The temperature of the material before the expansion is usually higher than 100°C and the pressure in the autoclave corresponds to the saturated steam pressure. Manifold applications of this process are presented on the example of the extraction of essential oil from dried ylang-ylang flowers. The essential oil is separated from the condensate. The treated flowers are also analysed. The results are compared with the classical steam distillation.

Keywords: Ylang-ylang, extraction, essential oil, steam distillation, Instantaneous Controlled Pressure Drop

IWPI 2006 (http://www2.kobe-u.ac.jp/~iwpi/).