

# High Pressure Processes

The research group **High Pressure Processes** deals with high pressure extractions and separations of mostly natural products, and also with impregnation processes. Besides the commonly used carbon dioxide, low boiling alkanes (like propane) or ethers (like dimethylether) are investigated as extractants or as entrainers.

Autoclaves for measuring high pressure equilibria (mostly based on the static analytical method) with and without windows as well as high pressure solid and liquid extraction equipment on laboratory scale allow basic data for finding optimal process parameters for operation to be provided.

Selected research projects are the extractions of natural products like almonds and caraway seeds, of squalene from olive oil damper condensate or of aroma compounds from wine and orange peel oil, or the refining of palm oil. Wood can be preserved by deep dyeing with the help of compressed CO<sub>2</sub>.

As an example of process development, the pulsated extraction of different natural solid materials is investigated. The pulsation enhances the overall mass transfer and thus increases the efficiency of solid extraction with compressed gases.

A variety of analysis equipment including a supercritical fluid chromatography enables us to analyze the samples from natural sources.

The use of equations of state, developed by the group "Fundamentals of thermodynamics", reduces the number of experiments.



Crushed almonds with leached zone at the top after the extraction with CO<sub>2</sub> in a fixed bed

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