

# Solubility of metal organic complex on the basis of magnesium and trilon B in supercritical carbon dioxide.

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While solving the industrial problem of removal fine-grained Mg from the cellulose carrier we investigate an opportunity of dissolution and allocation of metal through metal organic complex formation. The magnesium organic complex is obtained by interaction between equimolar quantities of disodium salt of ethylenediaminetetraacetic acid (trilon B) and fine-grained Mg. The interaction between Mg and trilon B occurs only in the damp environment. Because of it distilled water was used as an environment for complex formation. Also the use of damp samples leads to increase in solubility of target components in the supercritical fluid.

Process of metal organic complex research was carried out using the experimental assembly created on the basis of syringe pump. The assembly carrying out the process of extraction in the temperatures up to 363 K and the pressures up to 40 MPa.

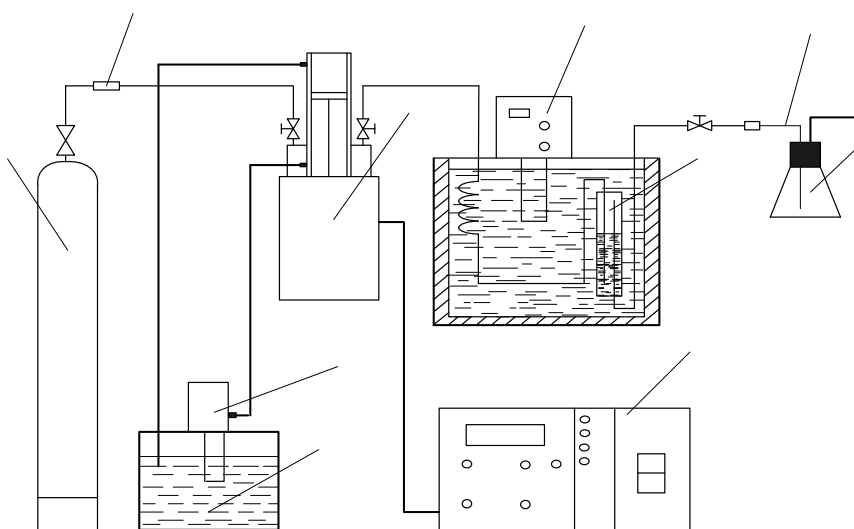


Fig. 1. The scheme of experimental assembly.

1 - syringe pump, 2 - electronic block of management, 3 - extractor, 4 - collection of extract (dissolved substance), 5 - cylinder with CO<sub>2</sub>, 6 - filter, 7 - pump, 8 -

capacity with cold heat-carrier, 9 - thermostat, 10 – capillary tubing with functions of a throttling device.

Results of researches are presented on fig. 2.

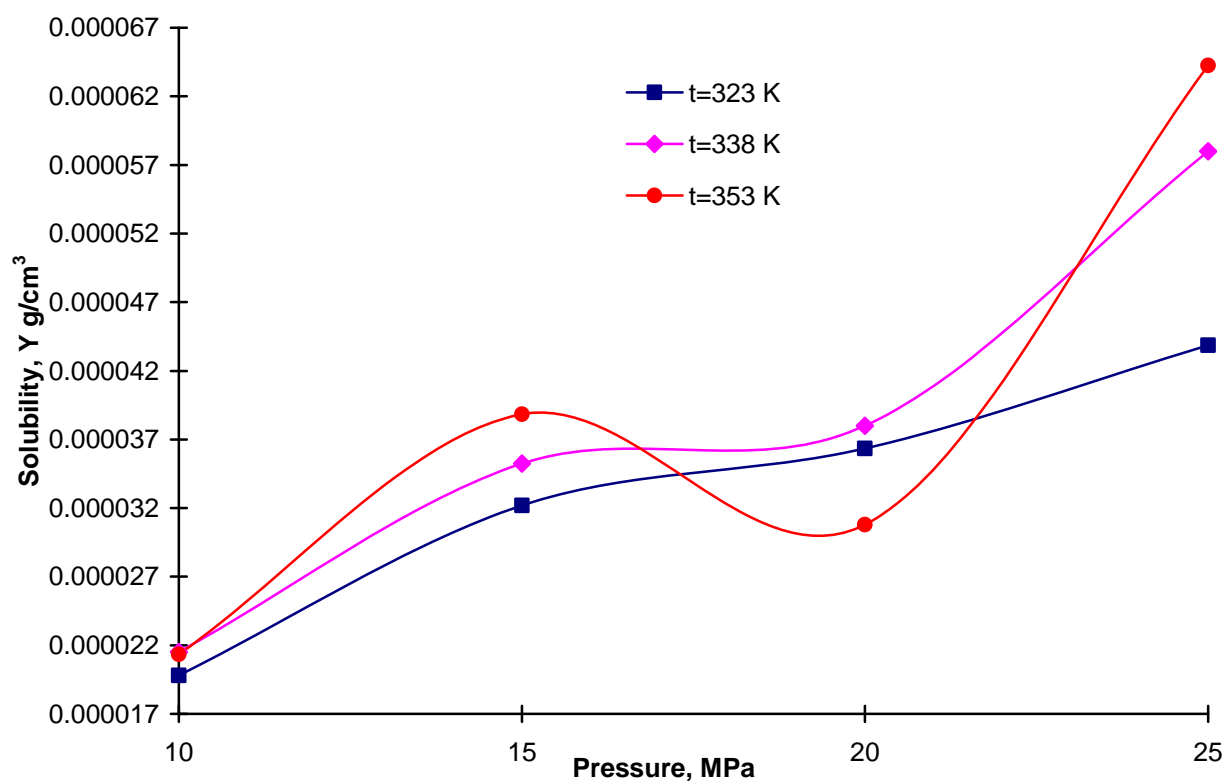


Fig. 2. Dependence of solubility of a complex (Mg + trilon B) from pressure.

Obtained experimental data revealed that increase in pressure leads to increase in the complex solubility.

However the complex solubility at 353 K temperature tends to fall at the pressure of 20 MPa. The same behavior was observed while researching caffeine solubility in supercritical CO<sub>2</sub>. According to literary data, dioxide carbon in the interval of pressure from 16 MPa up to 22 MPa and temperatures from 333 K up to 363 K low dissolving ability occurs, but high selectivity on caffeine was found. Probably such character of metal complexes solubility takes places also in our case.