Answer on Question #41208, Chemistry, Other

Question
DEAR SIR
 IN GAS CHROMATOGRAPHY FOR EXAMPLE FID DETECTOR DETECTION LIMIT IS PgC/s. how can i convert it to ppm mol propane for example?
best regards
edward

Answer
Dear Edward,
I assume that you accidentally pressed shift in "PgC/s" and it was really "pgC/s" - **pico**grams of carbon per second, not **peta**grams per second. 1 picogram = 10^{-12} gram, 1 petagram = 10^{+15} gram.

Basically, you can not make such a conversion. You can convert "mass of carbon per time" to "mass of propane per time" and, having the concentration of propane in ppm, even to "apparent mass of your analyte per time".

But: when you inject an analyte to the chromatograph, it then goes through the column being dissolved in the carrier gas. When propane had passed the column, its concentration on the column exit (that is FID entrance) has **no** dependence on the original concentration in the analyte.

Chromatograph is not a device capable of absolute measurements, it is a device capable of ratio measurements. It can only compare two analytes: "in analyte A the concentration of propane is X times that of in analyte B", but it doesn't give you neither one nor another figure, it gives you just a ratio.

To know how much propane really was present in your probe, you just measure the upmentioned ratio of your analyte to the so-called "*standard analyte*" in which you **already know** the concentration of propane. And to find out the detection limit in ppm you just take different standard analytes with lesser and lesser and lesser **known** concentrations of propane until your FID shows no signal. The last concentration at which the signal was still present would be your desired detection limit.

Hope this helps.