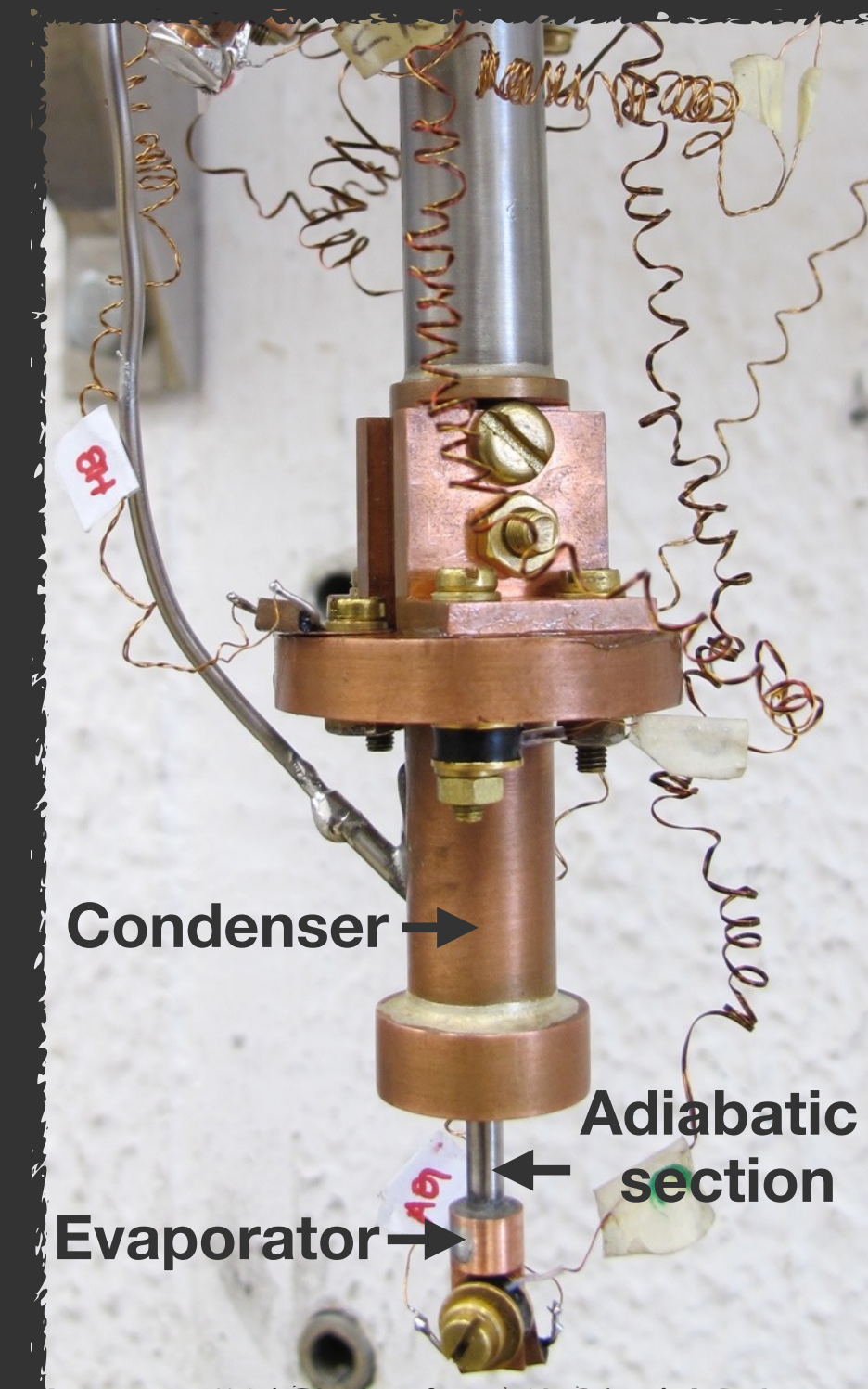
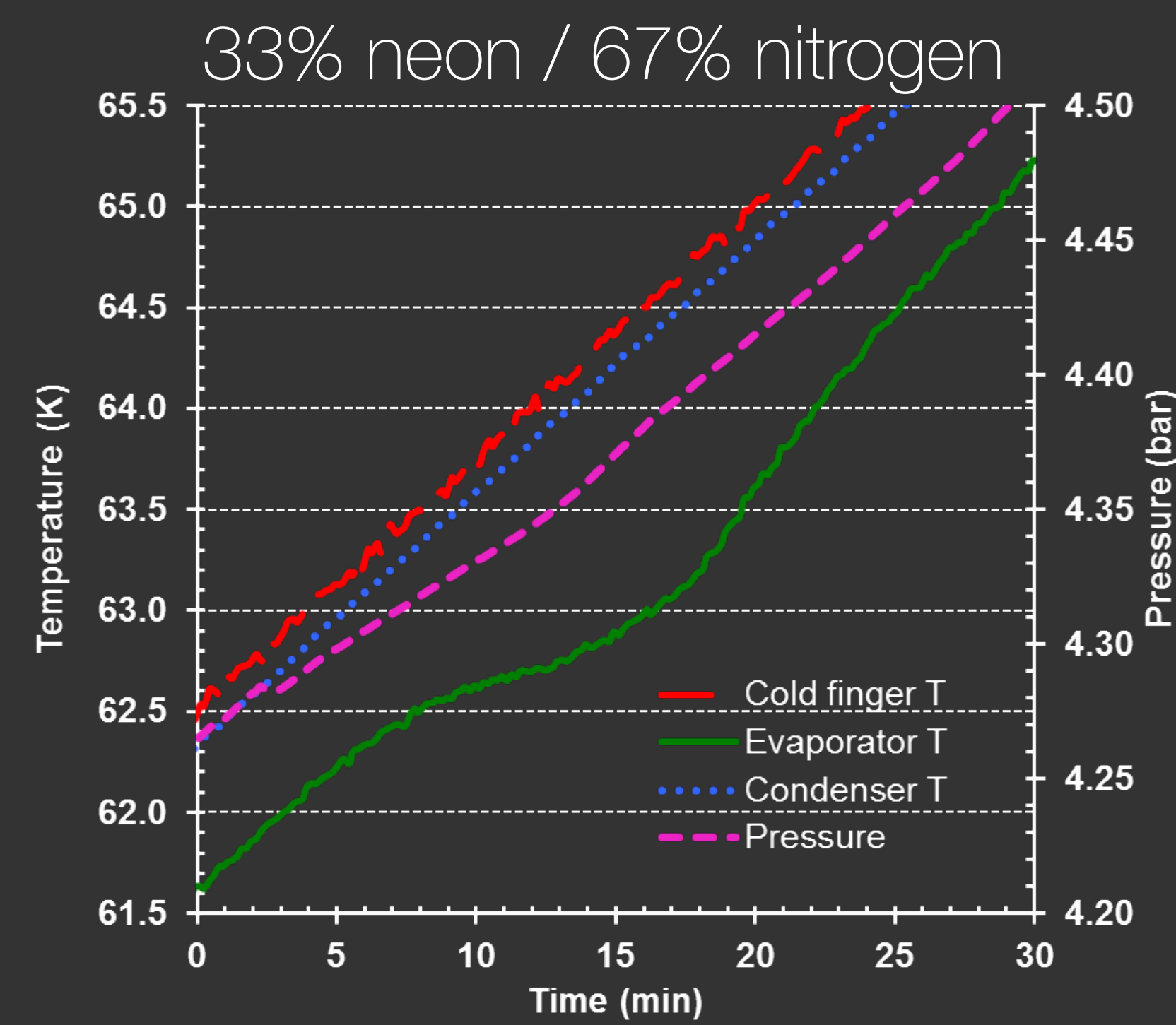
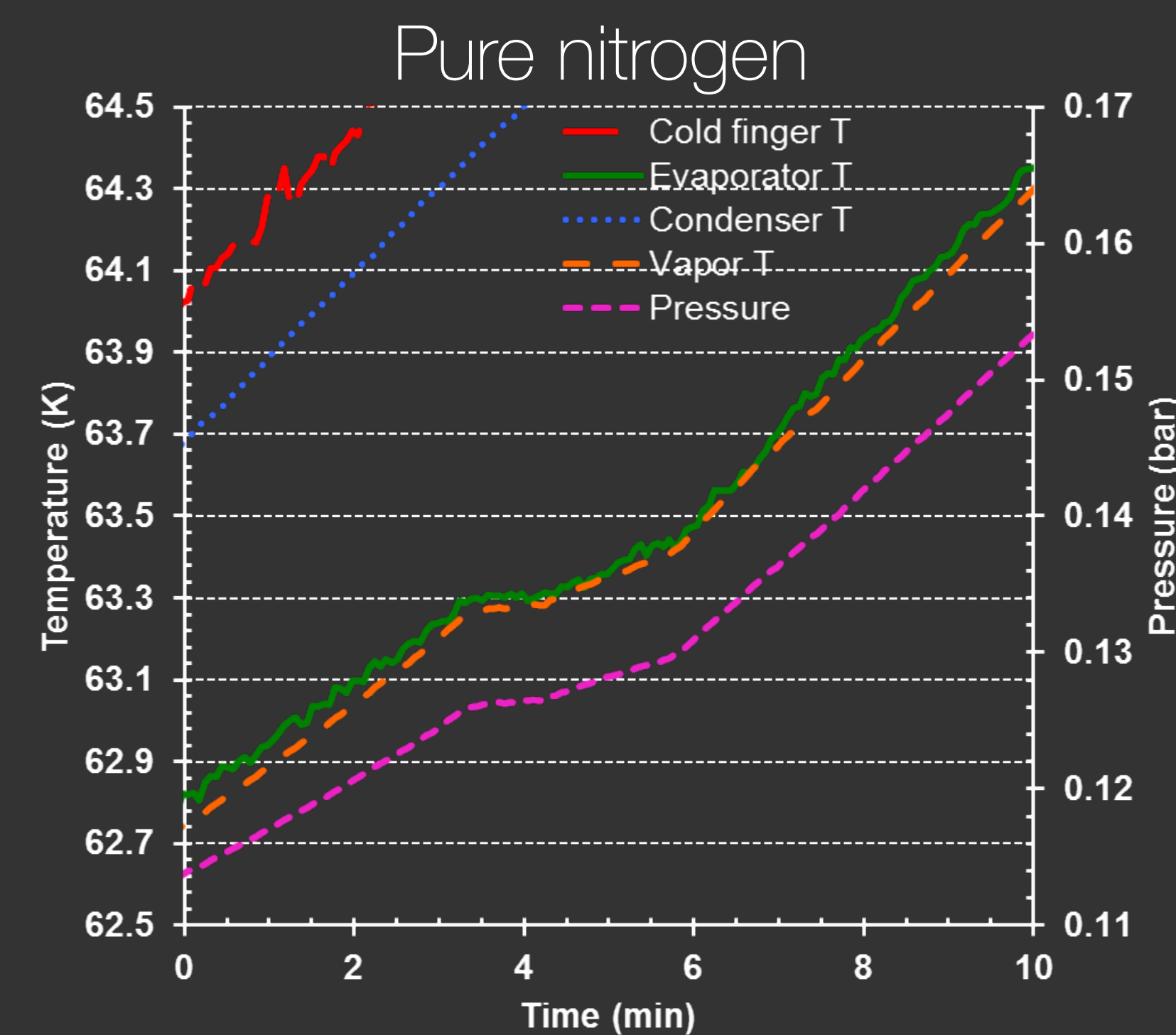


# Contribution to the study of neon-nitrogen mixtures at low temperatures

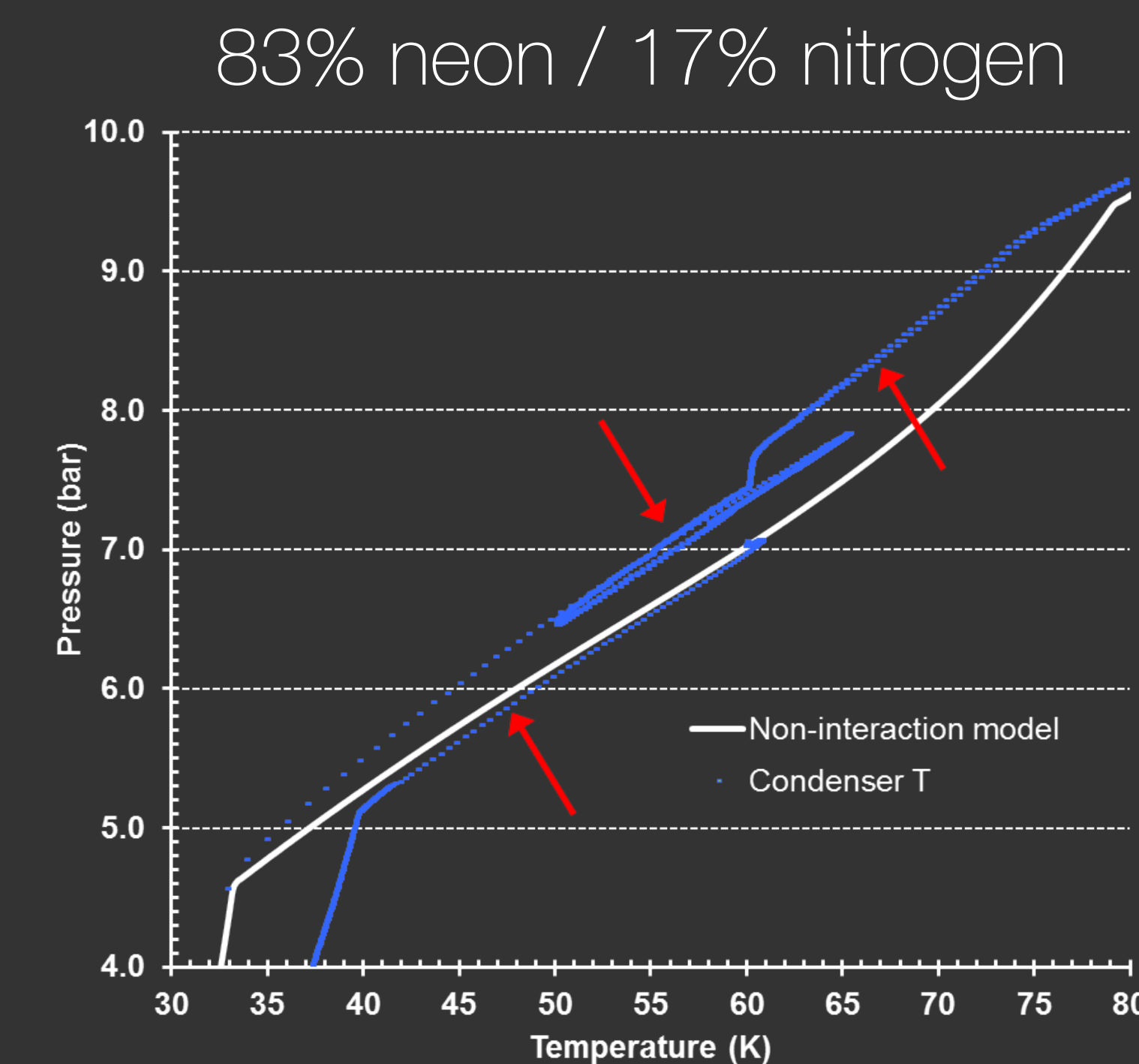
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Experiments were conducted with mixtures of **neon and nitrogen** at **low temperatures**, in order to assess whether a **liquid neon-nitrogen mixture** can be obtained **below 63.15 K**. Indications that there may be a **process of neon dilution in solid and liquid nitrogen** are shown, as well as evidence of **changes in the nitrogen phase diagram** due to the introduction of neon. Evidences of a change in the **nitrogen triple-point temperature** from 63.15 to 62.5 K are presented and discussed.

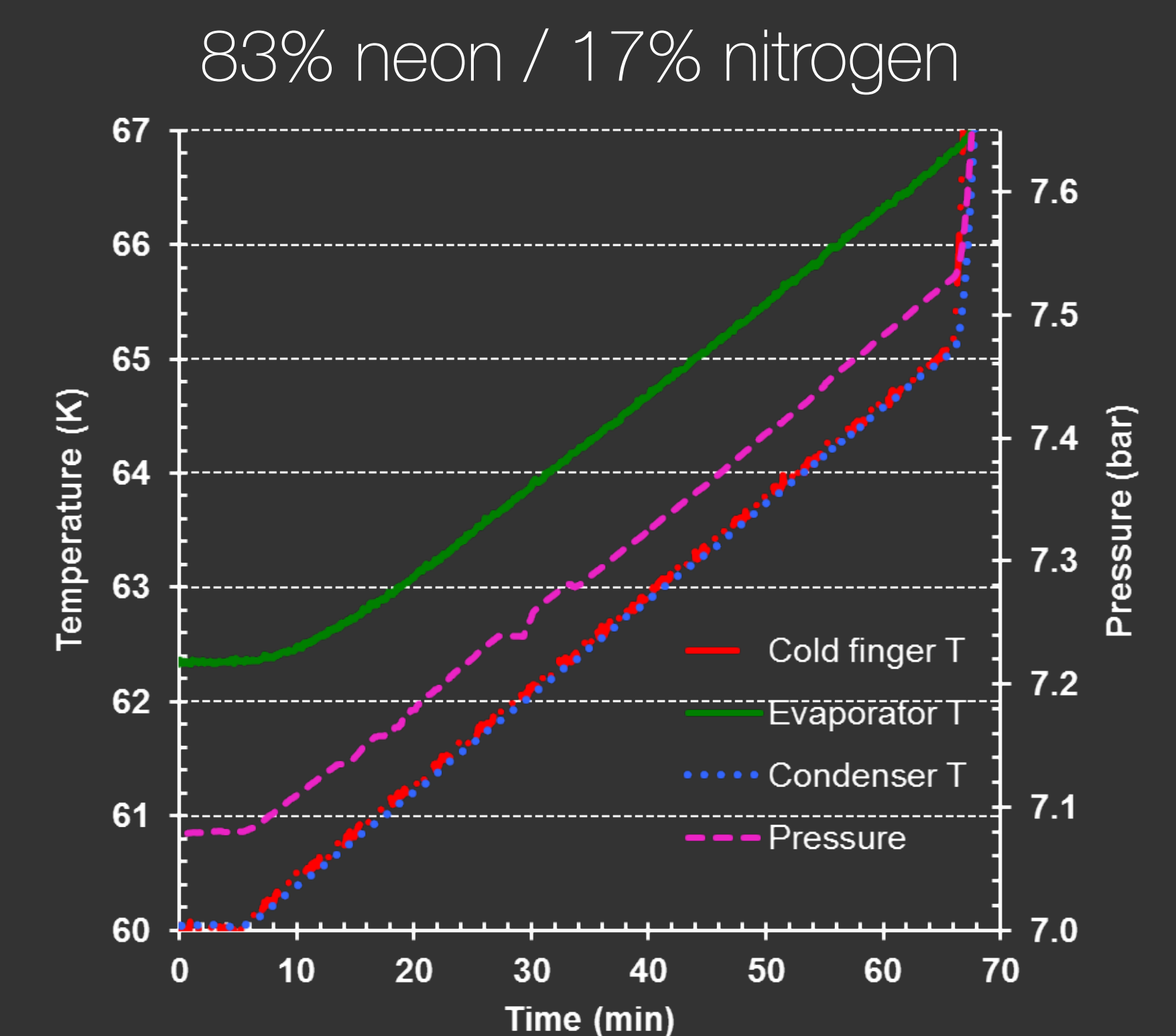
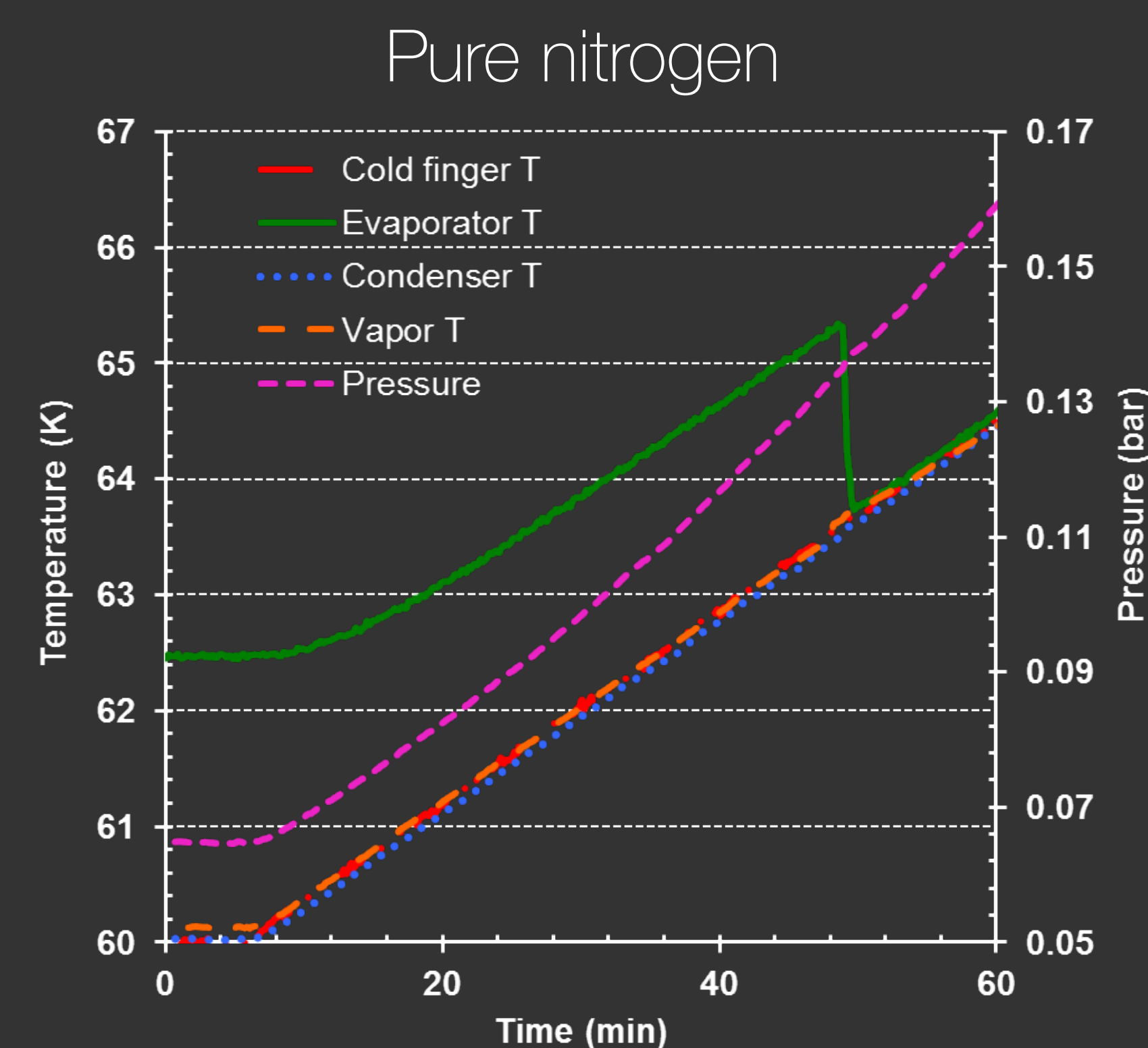
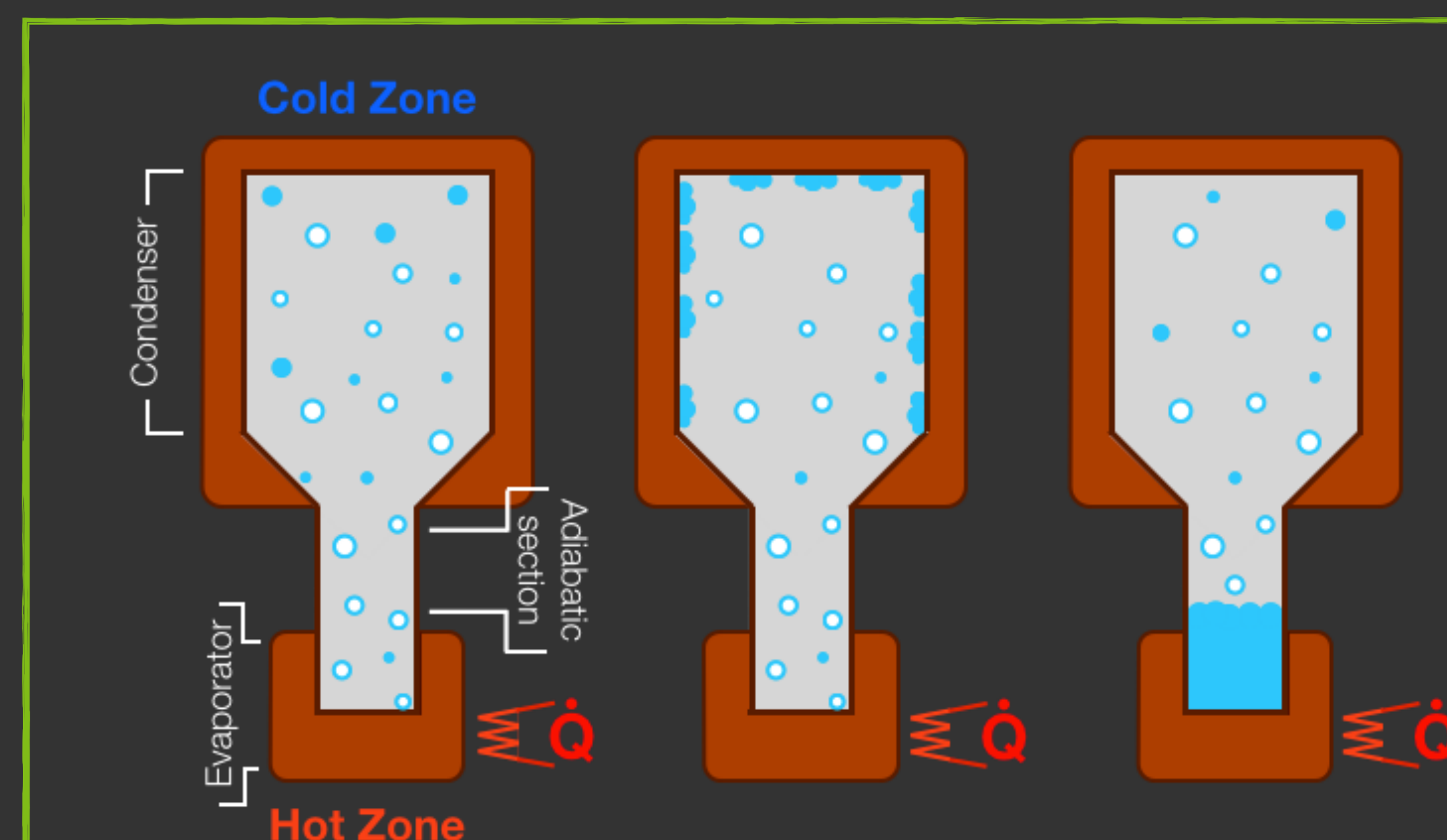
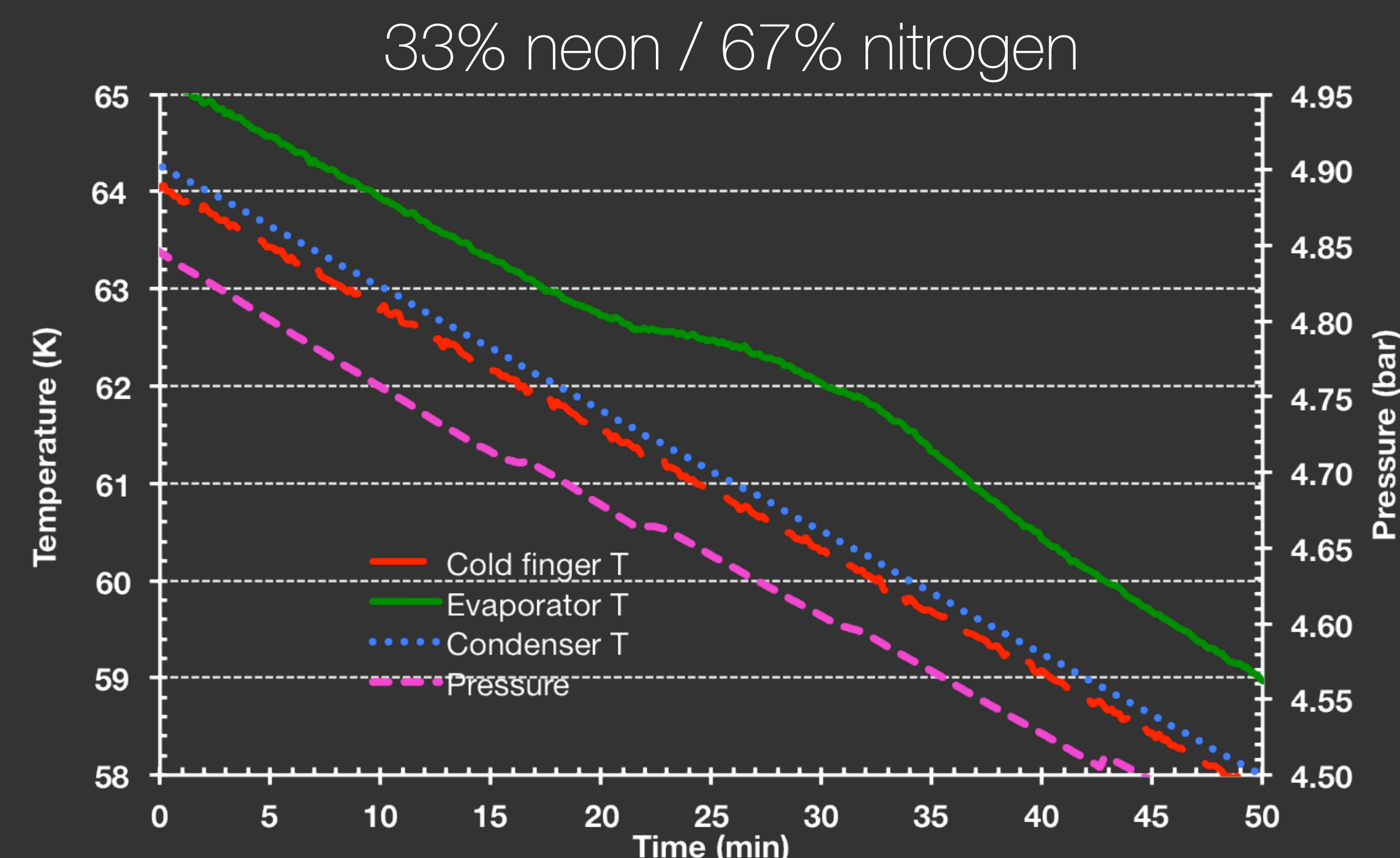


High-pressure, multipurpose cryogenic cell used for the experiments.



**PT diagram** for an 83% neon, 17% nitrogen mixture. The existence of equilibrium curves different from the one predicted by the model indicates that **neon plays a part in influencing the phase diagram of nitrogen**. The phase diagram was thus changed due to the dilution of neon in the condensed phases of nitrogen.

**Left:** triple-point transition of pure nitrogen at 63.15 K. **Right:** same transition in a 33% neon, 67% nitrogen mixture, where a **change in the triple-point temperature** is seen, **occurring at 62.5 K**, regardless of the direction of phase change: it can be seen either in the solid-to-liquid change or *vice-versa* (**below**).



Liquid falls onto the evaporator after a triple-point transition for pure nitrogen. Neon-nitrogen mixture experiments show no such phenomenon, either due to a **change in the triple point temperature** or due to a lesser amount of liquid being formed.