

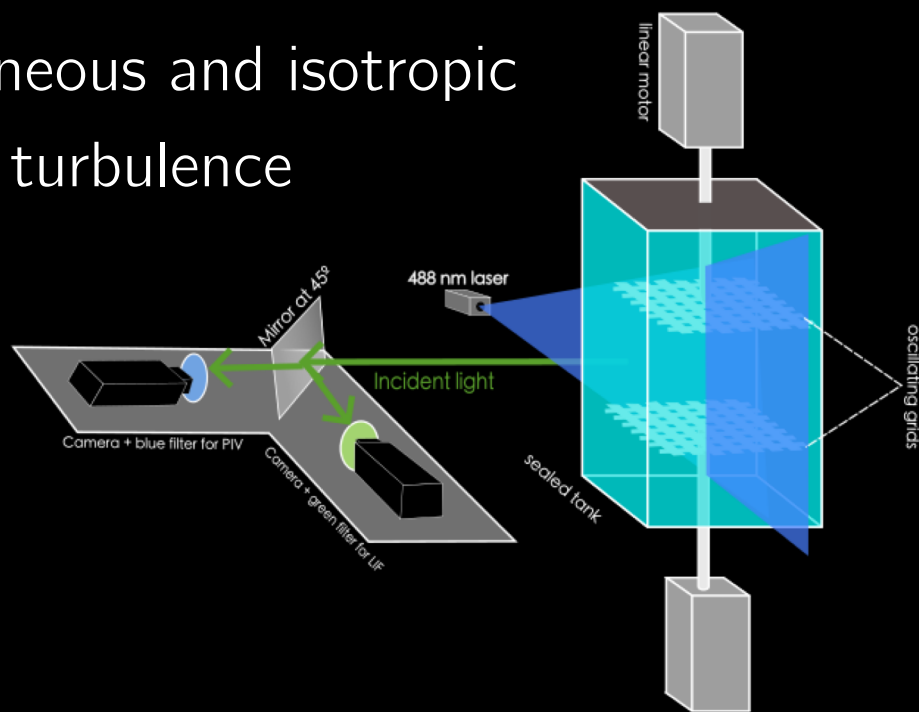
Reactive fronts propagation in turbulence

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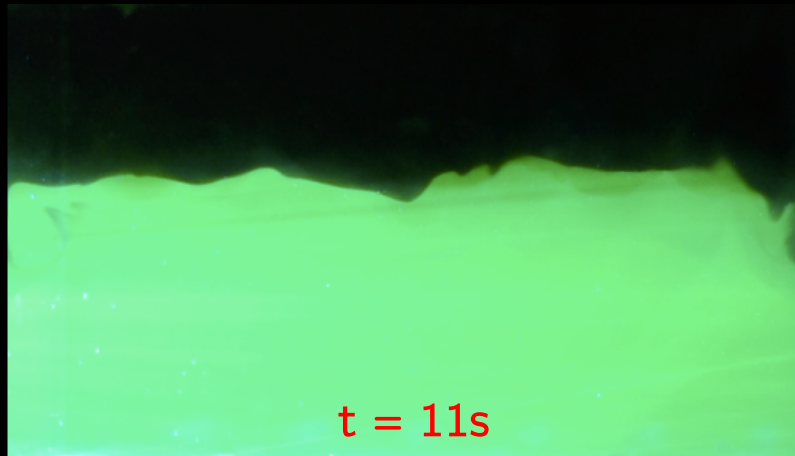
Homogeneous and isotropic turbulence



- Isothermal process

↳ **Specific** influence of turbulence on the front shape/propagation velocity

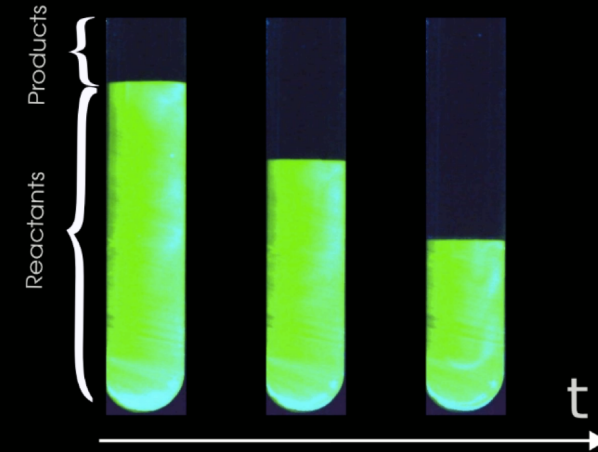
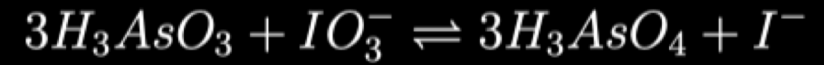
$$Da = 3.7 \cdot 10^{-3}, Re_M = 660$$



$$u_{RMS} = 1.37 \text{ mm/s} \rightarrow V_f \approx 0.1 \text{ mm/s}$$

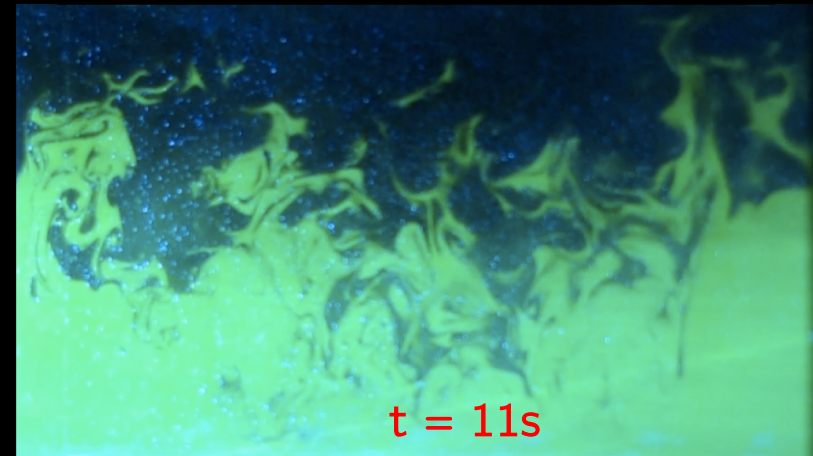
- Low density difference

Autocatalytic reaction



- Thin front (reaction zone)

$$Da = 9.14 \cdot 10^{-4}, Re_M = 2310$$



$$u_{RMS} = 5.47 \text{ mm/s} \rightarrow V_f \approx 0.5 \text{ mm/s}$$