

# Experiments on the impact of a liquid onto a lighter immiscible liquid

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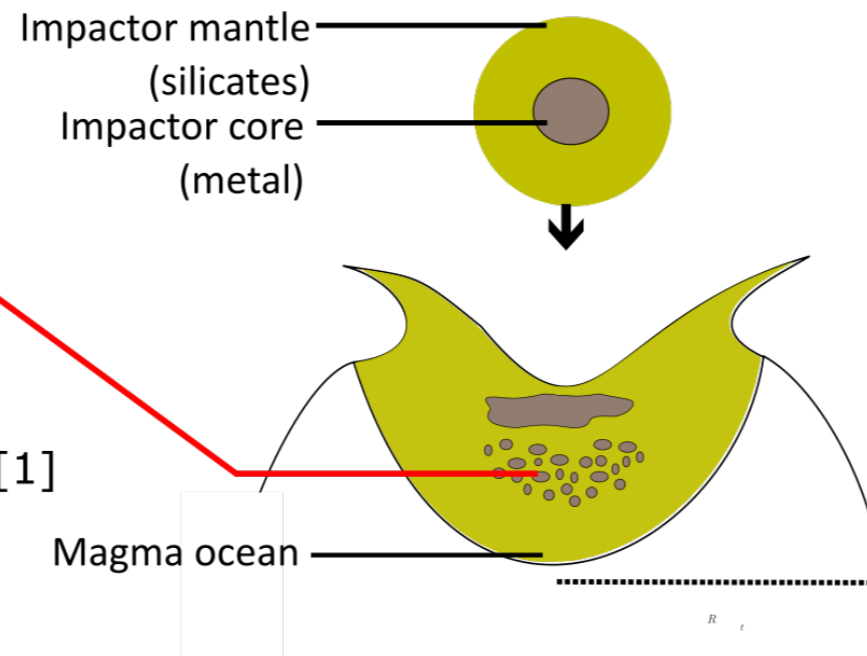


## From planet formation by impacts

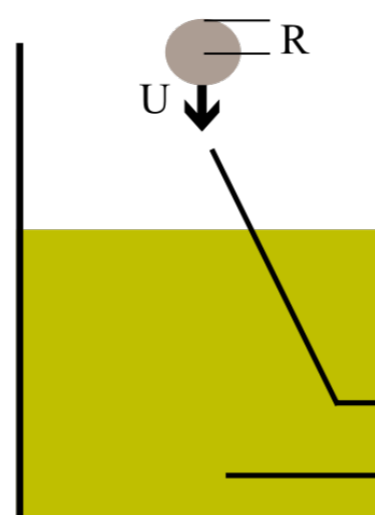
Does the core of the impactor fragment during an impact?

↓  
 Chemical transfers between metal and silicates

↓  
 Composition of core and mantle [1]



to the lab

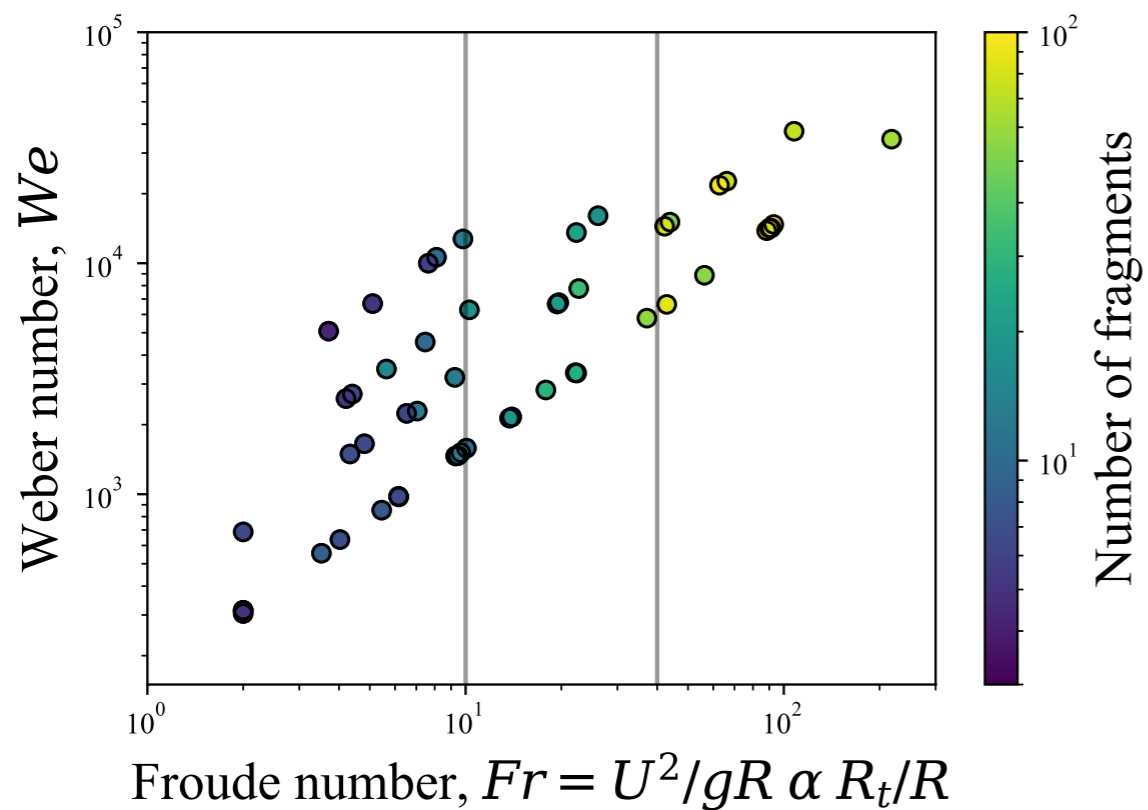
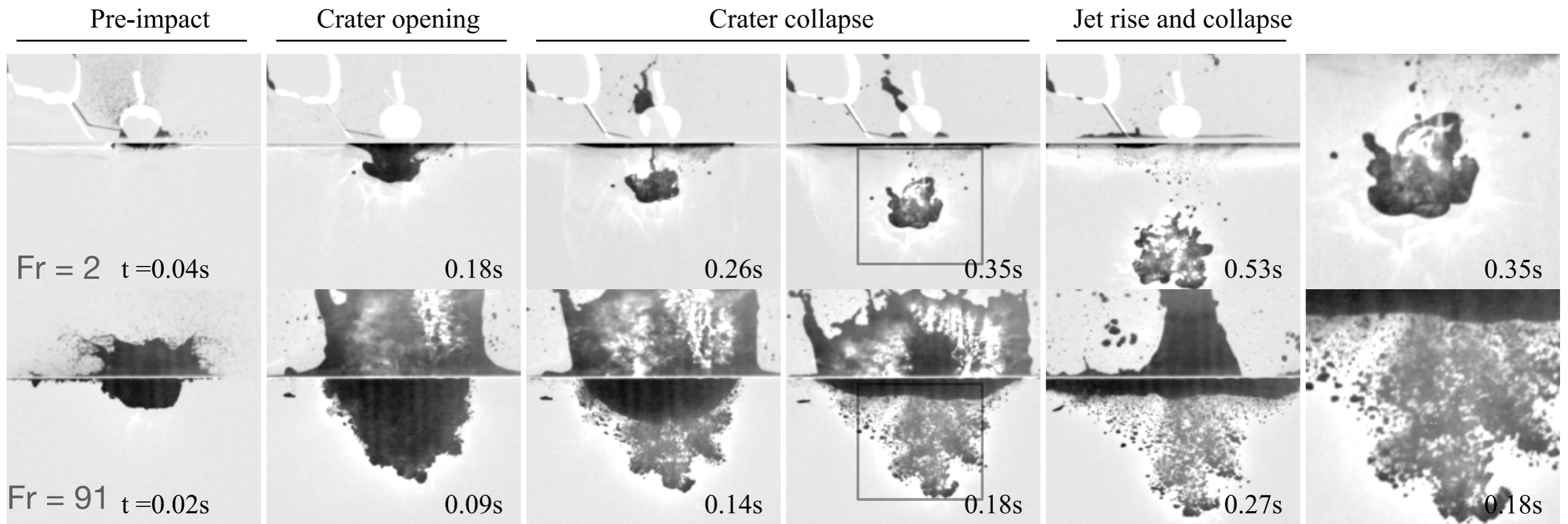


### Dimensionless numbers

		Planet form.	These exp.
Rayleigh	$gR$	1 - 500	2 - 300
Weber	$We = \frac{\rho_i U^2 R}{\sigma} > 10^{12}$		$10^2 - 10^5$
Density anomaly	$P = \frac{\rho_i - \rho_t}{\rho_t} \sim 1$		0.94

Impacting liquid, PFC,  $\rho_i$

Immiscible target liquid, water,  $\rho_t$



Fragmentation is controlled by  $Fr$

Rayleigh-Taylor instabilities between the impacting and Target fluid

Competition of the crater opening, capillary and Rayleigh-Taylor instability timescales explains the dependence on  $Fr$