

**Table S6 Summary of error components and resulted density errors for liquid samples**

Sample	Run	$\rho$ error from length & rotation errors [%]	$\rho$ error from boundary threshold error [%]	Total density errors [%]
Fe	AK18	0.001–0.051	0.393–0.699	0.620–0.718
	AK20	0.001–0.038	0.027–0.666	0.400–0.670