

Abstract Submitted
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The coarse graining scale in turbulent mixtures EMMANUEL VILLERMAUX, Irphe, Marseille, France, JÉRÔME DUPLAT, Iusti, Marseille, France — What is the physical lengthscale which supports the concentration content in a stirred mixture? Among the lengthscales familiar in stirred mixtures is the dissipation scale which equilibrates substrate deformation and diffusive smearing rates. That scale is a decreasing function of the deformation rate, and is thus a decreasing function of the Reynolds number in turbulent flows. We will show that the mixture concentration content is defined on a support whose elementary brick

$$\eta = LSc^{-2/5}, \quad (1)$$

is much larger. It scales like the stirring scale L , depends on the Schmidt number Sc and is independent of the Reynolds number. This scale results from the aggregation of bundles of elementary stretched scalar sheets, merging under large scale substrate deformation. The above law is supported by measurements covering two decades in L and three decades in Sc .

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