

Abstract Submitted
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Mixing quantification in electromagnetically driven flow between concentric spheres¹ ALDO FIGUEROA, CONACYT-CInC-UAEM, PATRICE MEUNIER, IRPHE — The mixing quantification of a scalar in the gap of a two concentric spheres is studied theoretically. The flow is electromagnetically driven and is mainly rotational. The driving Lorentz force is generated by the interaction of a dc electric current radially injected in the equatorial zone and a dipolar magnetic field. A full three-dimensional numerical model was developed and has been calibrated with experimental velocity data. A new mixing protocol for high Péclet number has been developed. This method is based on the diffusive sheet method (Martínez-Ruiz, Meunier, Favier & Duchemin, *J. Fluid Mech.*, vol. 837, 2018, pp. 230-257), which has been proven to be accurate in the mixing description of three-dimensional flows, however this new method is simpler and less time consuming.

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