

# Lab on a Chip

Devices and applications at the micro- and nanoscale

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$$\mathbf{u} \cdot \nabla \mathbf{u} = -\frac{1}{\rho} \nabla p + \nu \nabla^2 \mathbf{u}$$

$$\mathbf{u}_i \cdot \nabla C_i - D_i \nabla^2 C_i = R_i$$

$$\frac{\partial \rho_p}{\partial t} = R_p W_p$$

$$R_p = K_p \min \{ C_{CO_2}, C_{CO_3} \}$$

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**PAPER**

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Numerical microfluidic chip modeling of laminar vortex  
dynamics induced by biomineralization in evolving  
porous media