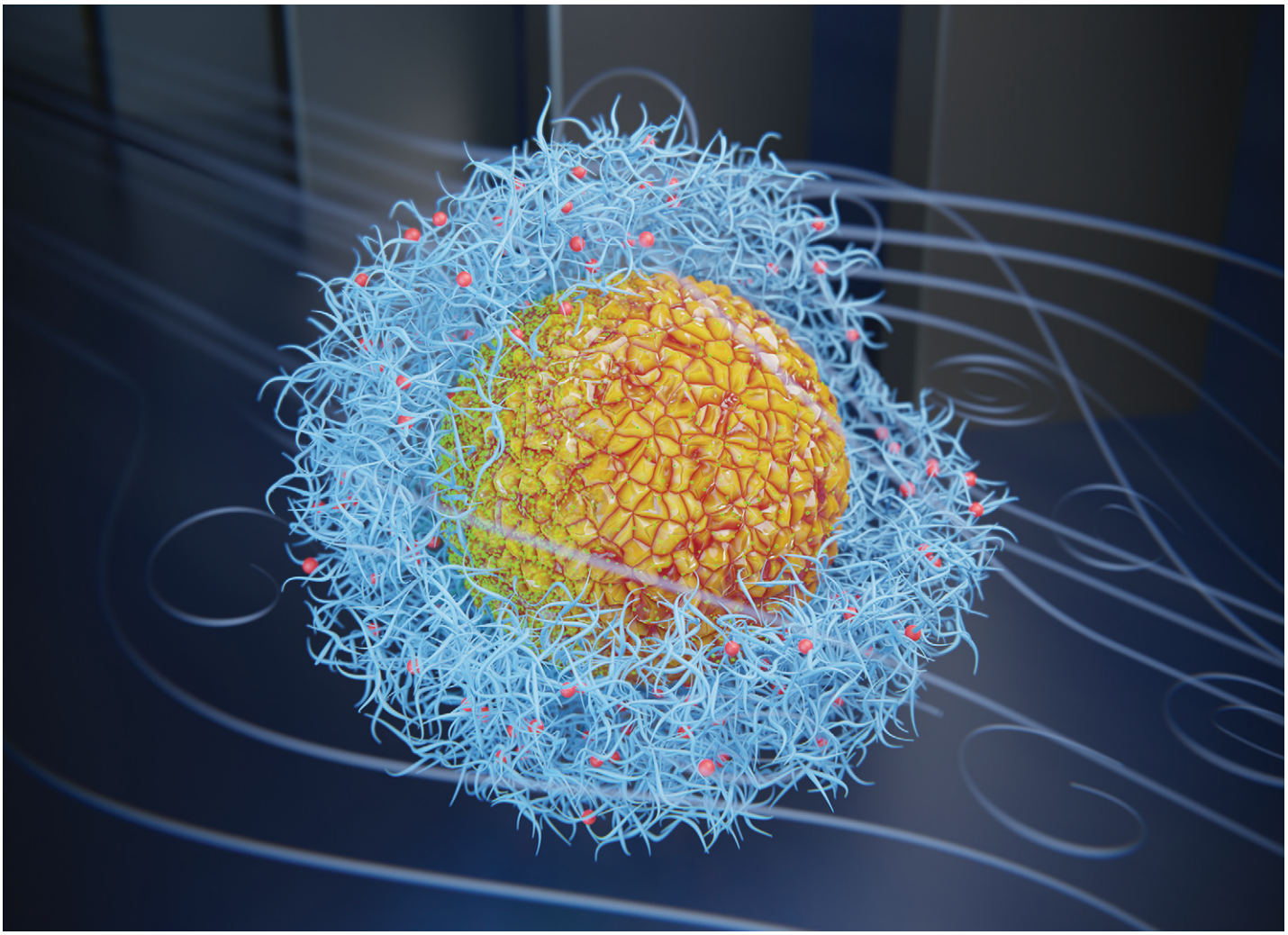

Showcasing research from Professor Boukany's laboratory, Department of Chemical Engineering, Delft University of Technology, Delft, The Netherlands.

Interstitial flow potentiates TGF-β/Smad-signaling activity in lung cancer spheroids in a 3D-microfluidic chip

Within the tumor microenvironment (TME), tumor cells leverage mechanotransduction pathways to translate biophysical forces into biochemical signals. For example, forces like interstitial flow (IF) activate several cytokines like transforming growth factor-β (TGF-β). TGF-β, via a Smad-dependent pathway, promotes epithelial–mesenchymal transition, enhancing cancer invasion. In this work, we demonstrate the potentiating effect of IF on exogenous TGF-β induced upregulation of the Smad-signaling activity, cell motility, and mesenchymal marker expression in A549 lung cancer spheroids. Our 3D-microfluidics platform offers a robust tool for studying cancer cell dynamics in a physiologically relevant TME.

As featured in:

See Pouyan E. Boukany *et al.*, *Lab Chip*, 2024, **24**, 422.

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