

# RSC Applied Interfaces

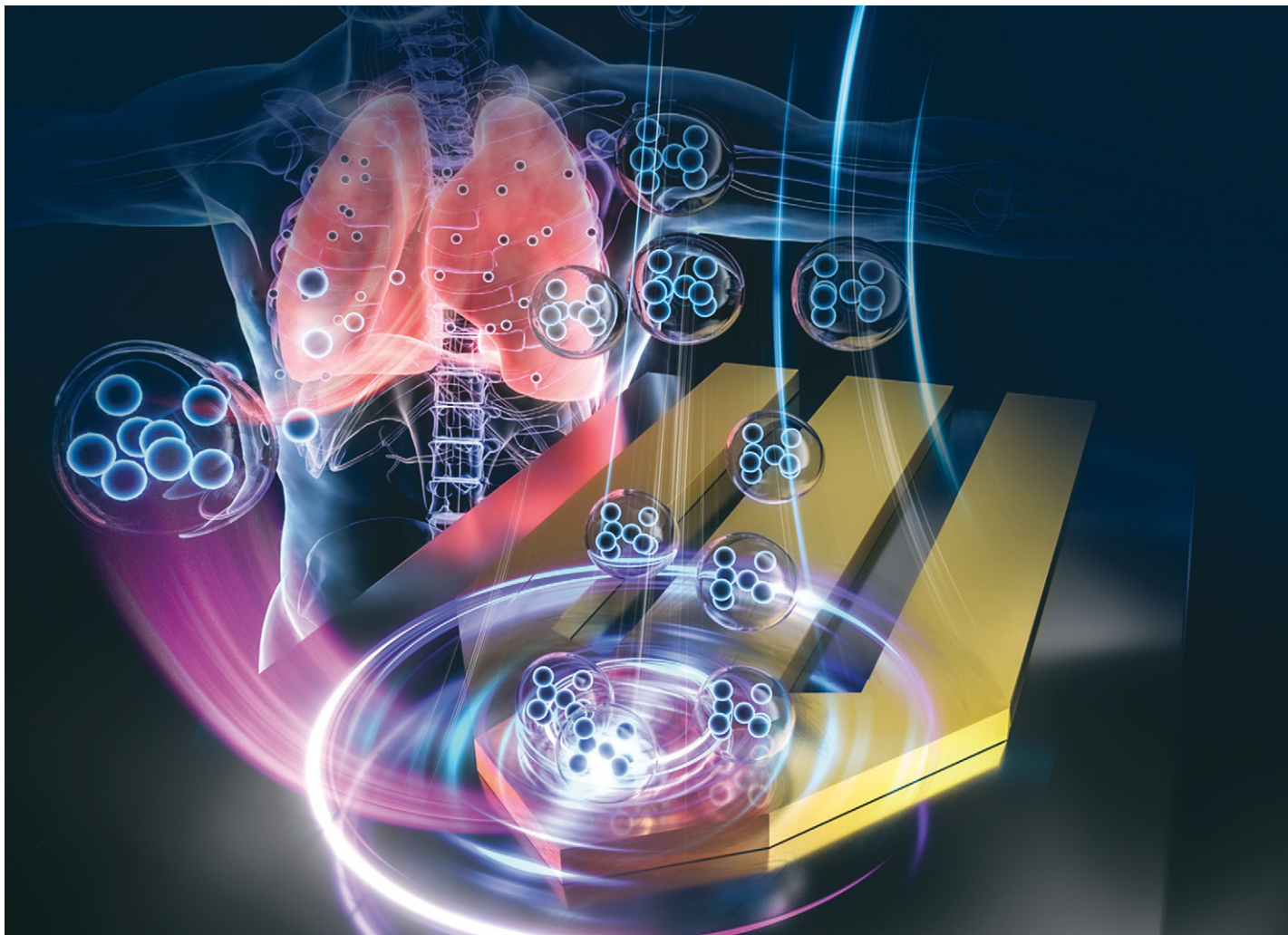
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**Interfacial and surface research  
with an applied focus**

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**Fundamental questions  
Elemental answers**



**Duan Lab | State Key Laboratory of Precision Measuring Technology & Instruments, Tianjin University.**

High frequency capillary wave-enabled ultra-small droplets for inhaled drug delivery

Revolutionizing Inhaled Therapy with GHz Acoustofluidic Nebulization

This work unveils a GHz bulk acoustic wave (BAW) nebulizer that overcomes decades-long limitations in pulmonary drug delivery. By harnessing capillary wave breakup, our portable device generates ultra-small (96%  $< 5 \mu\text{m}$ ), near-monodisperse droplets at ultra-low power ( $< 1 \text{ W}$ ). This technology pioneers GHz-driven acoustofluidics for next-generation inhaled therapeutics, from nanomedicines to gene therapies.

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**As featured in:**



See Xuexin Duan *et al.*,  
*Lab Chip*, 2025, **25**, 4898.