



3D Printing: A Paradigm shift for Lab-on-Chip and microfluidic devices

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Abstract:

LOAC and microfluidics were introduced nearly five decades ago with the promise of bringing revolutionary speed and the possibility of reduced medical costs, yet industry still struggles to bring products from benchtop to bedside; only a handful of devices have crossed this gap. Several hurdles have been identified: timeline, expense of mold-based production, and a perceived lack of funding for biotech start-ups. Are there other factors beyond these? Should we be expecting a microfluidic “killer app”, or is a better manufacturing process the “app”?

Both industry and academia have realized this critical juncture: more than ever, investigators are tasked with generating commercial value from their research and to develop new techniques that shorten or enhance current capabilities. 3D Printing (3DP), also known as additive manufacturing (AM) and Digital Manufacturing (DM) challenge the paradigm, and promise to move the industry from a mold-based process to a digital realm. This would offer significant advantages across the product development and lifetime product spectrum, including: enhanced prototype capabilities, road-to-market expediency, and supply-line and inventory simplification. Applying this leverage at the academic and biotech start-up level will provide important advantages, lowering “risk” and enhancing overall product value. This in turn enables the opportunity to reconsider core requirements for worthwhile endeavors and “success”. Further, it drives reflection into the current hierarchy of hospitals, clinics, home-based POC and low-infrastructure rural markets to leverage and adopt new technologies. In this session we will learn how 3D printing in a microfluidics application has the potential shift medicine’s trajectory.



Biography:

Elliot McAllister is thriving working at the intersections of engineering disciplines and science to solve, functionally, what the customer needs and bring them to the next level. To accomplish this, he looks at the value-add propositions of my clients, shortens the loops by removing the unnecessary, reaches out and builds great teams to iterate ideas and rapidly improve. Every time our tool-box of expertise and experience grows

Recent Publications:

1. PB Taylor, S Ashman, SM Baddeley, SL Bartram, CD Battle, BC Bond, Journal of biomolecular screening 7 (6), 554-569
2. “C Baur, JR DiMaio, E McAllister, R Hossini, E Wagener, J Ballato, S Priya, Journal of Applied Physics 112 (12), 124104
3. CA Baur, E McAllister, JR DiMaio, DW Smith ABSTRACTS OF PAPERS OF THE AMERICAN CHEMICAL SOCIETY 245
4. C Baur, J DiMaio, R Hossini, E McAllister, E Wagener, B Lund, S Priya, Abstracts of papers of the American chemical society 244

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