



**Dr. Julian Thiele**  
Group leader  
TUD Young Investigator



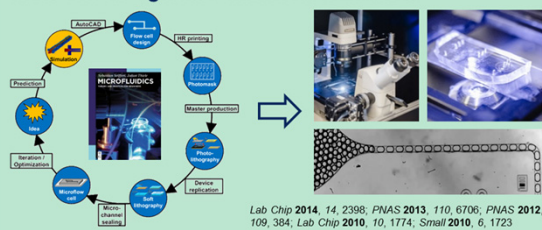
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## Evolution of active soft matter by multi-scale polymer processing

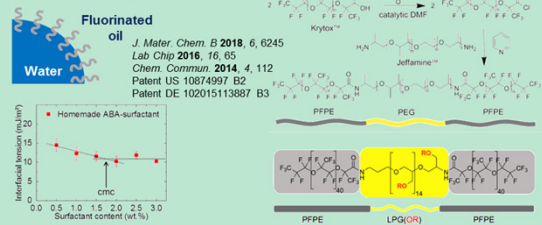


### Microfluidics

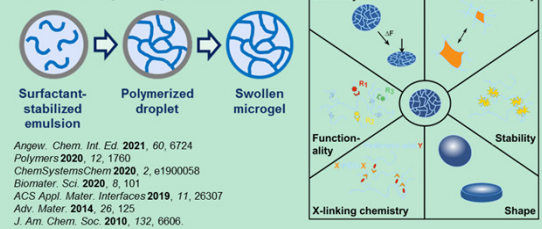
#### Flow cell design and emulsion formation



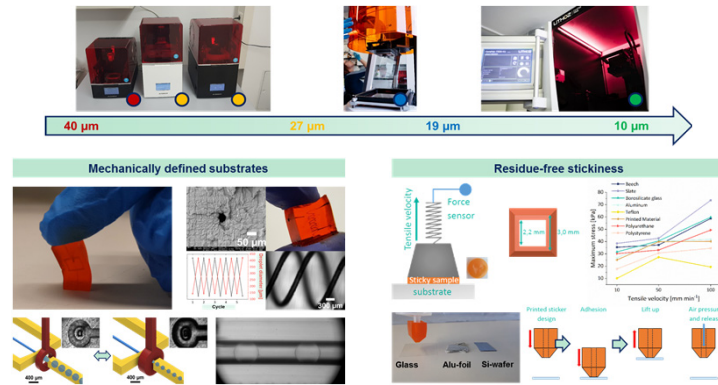
### Surfactant design



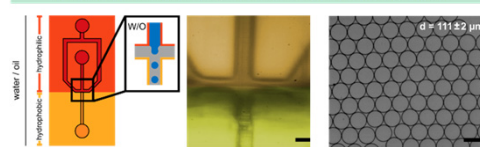
### Tailored hydrogel formation



### Additive manufacturing



### Multimaterial printing towards system integration

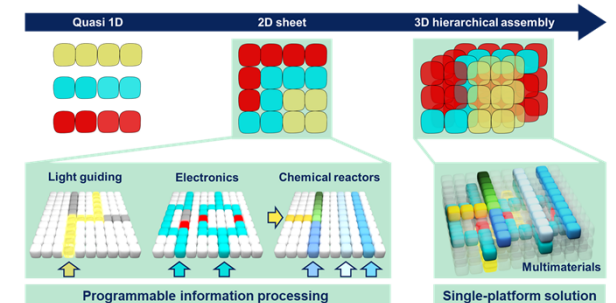


### Biocompatibility

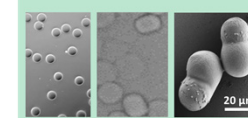


### Next-level material design

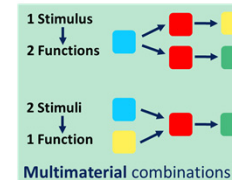
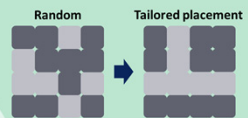
We need to address the demand for adaptive-responsive materials!



### Particles as building blocks



### Structural control



Towards 4D polymer materials

highly integrated multifunctional reprogrammable scalable

