

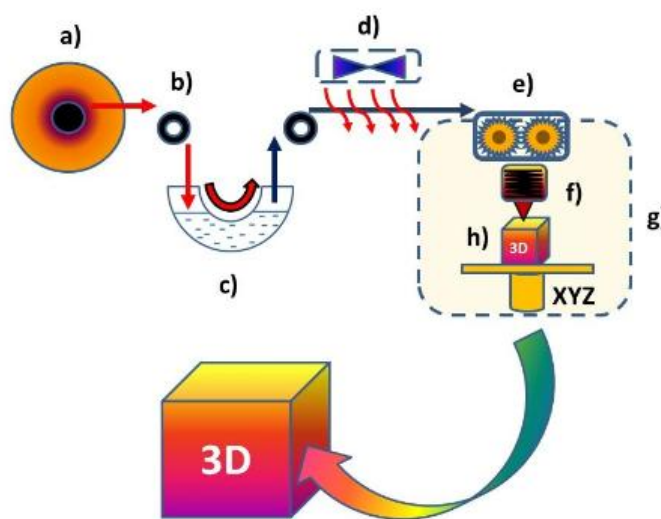


## Liquid for Fused Deposition Modeling Technique (L-FDM)—A revolution in application chemicals to 3D printing technology : organosilicon compounds case study

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It will be presented a novel, patented [1] 3D printing technique called L-FDM (liquid for fused deposition modeling), which is based on the deposition of molten thermoplastic material. The new method allows for the direct introduction of chemicals and polymer filament modifications during the printing process. In contrast to traditional incremental methods, L-FDM eliminates the need for extra granulating, extrusion, and processing equipment, making it possible to introduce chemical additives to the polymer matrix directly [2]. This opens up exciting possibilities for chemical laboratories to test and experiment with new and known chemicals through 3D printing. A number of organosilicon compounds, such as silanes, polysiloxanes and silsesquioxanes, were used in the research, demonstrating the direct introduction into the polymer matrix by the LFDM technique. The presented technique of accelerating the testing of polymeric materials modified with organosilicon compounds.



A short concept of a new printing technique—liquid for fused deposition modeling (L-FDM): (a) polymer material spool, (b) a filament, (c) reservoir containing a modifier, (d) drying of the modified filament, and (g) traditional FDM printing ((e) extruder, (f) heating block with nozzle, (h) 3D-printed part)

### References

1. Polish patent application no. P.441923
2. R.E.Przekop, E.Gabriel, D.Pakuła, B.Sztorch, *Appl. Sci.* 2023; 13(13):7393. <https://doi.org/10.3390/app13137393>