كلية المنصور الجامعة
و
الجمعية العراقية للمكتبات والمعلومات

صرح علمي .. مميز

تقيم

ورشة عمل ألكترونية بعنوان

الطباعة الثلاثية الأبعاد بوابة بحث جديدة للباحث العراقي

شهادة مشاركة الكترونية

الاحد

2020/05/31

08:00 مساءا-بغداد

06:00 مساءا -لندن

المحاضر:

أ.م. د. سعد حميد عبد

م. د. مي كامل مهدي

قسم علم الحاسوب ونظم المعلومات - كلية المنصور الجامعة

الورشة الالكترونية رقم 8

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دائرة تكنولوجيا المعلومات

وحدة التعليم الالكتروني- وحدة ضمان الجودة

3D Printing as new gateway for Iraqi Researchers

الطباعة ثلاثية الابعاد كبوابة بحث جديدة للباحث العراقي

تقديم : أ.م.د. سعد حميد عبد

saad.hameed@muc.edu.iq

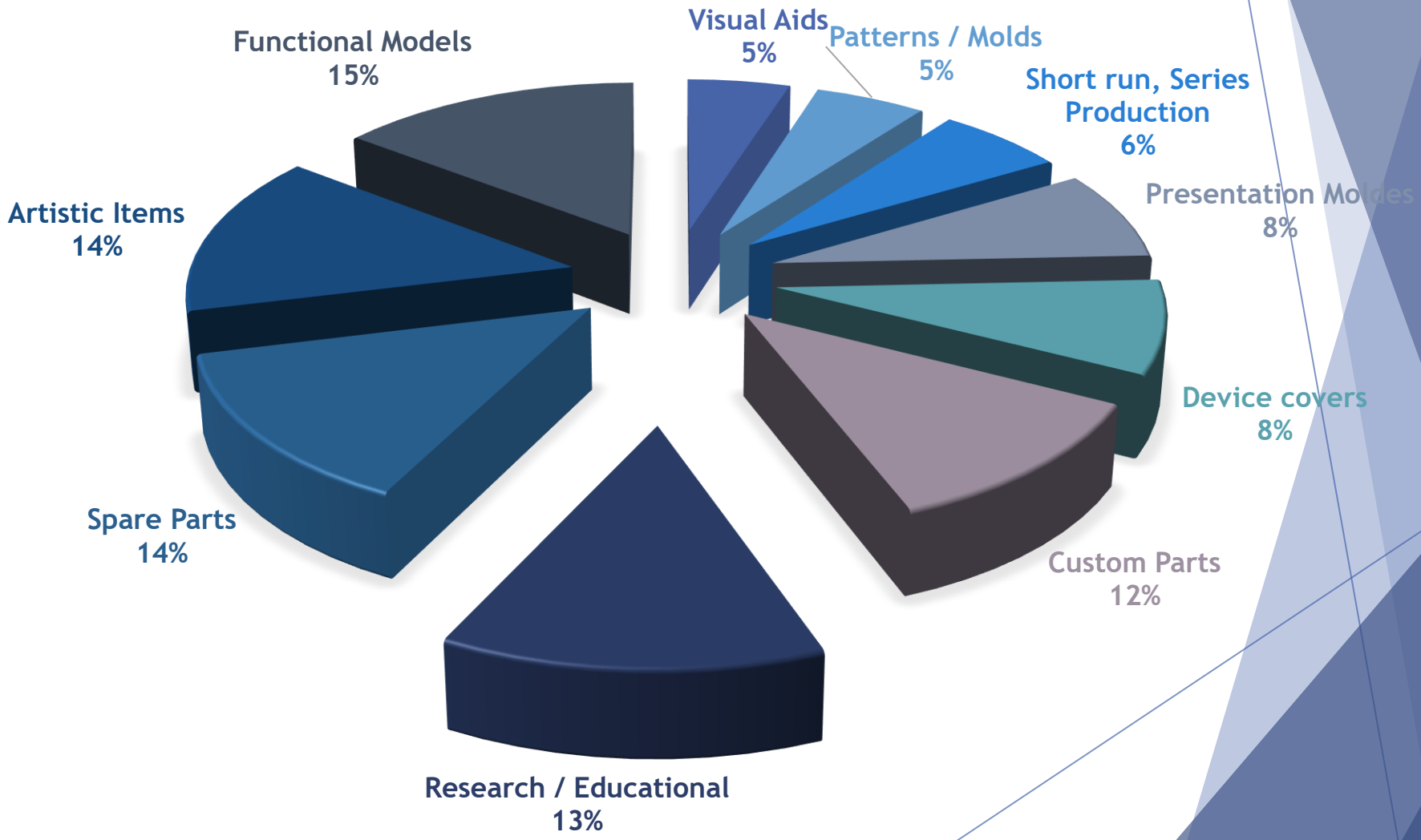
اعداد ومادة علمية

م.د. مي كامل مهدي

قسم علم الحاسوب ونظم المعلومات

كلية المنصور الجامعة

3D Printing Applications



Prototyping technologies

- **Additive**
  - **3D printing**
- **Subtractive**
  - **Milling (CNC & Manual)**
  - **Cutting (Laser, Plasma, Router)**

What is 3D printing

- **3D printing (or additive manufacturing) is a process of making a three-dimensional solid object of virtually any shape from a digital model.**

- **3D printing is achieved using an additive process, where successive layers of material are laid down in different shapes.**

Methods & Technologies

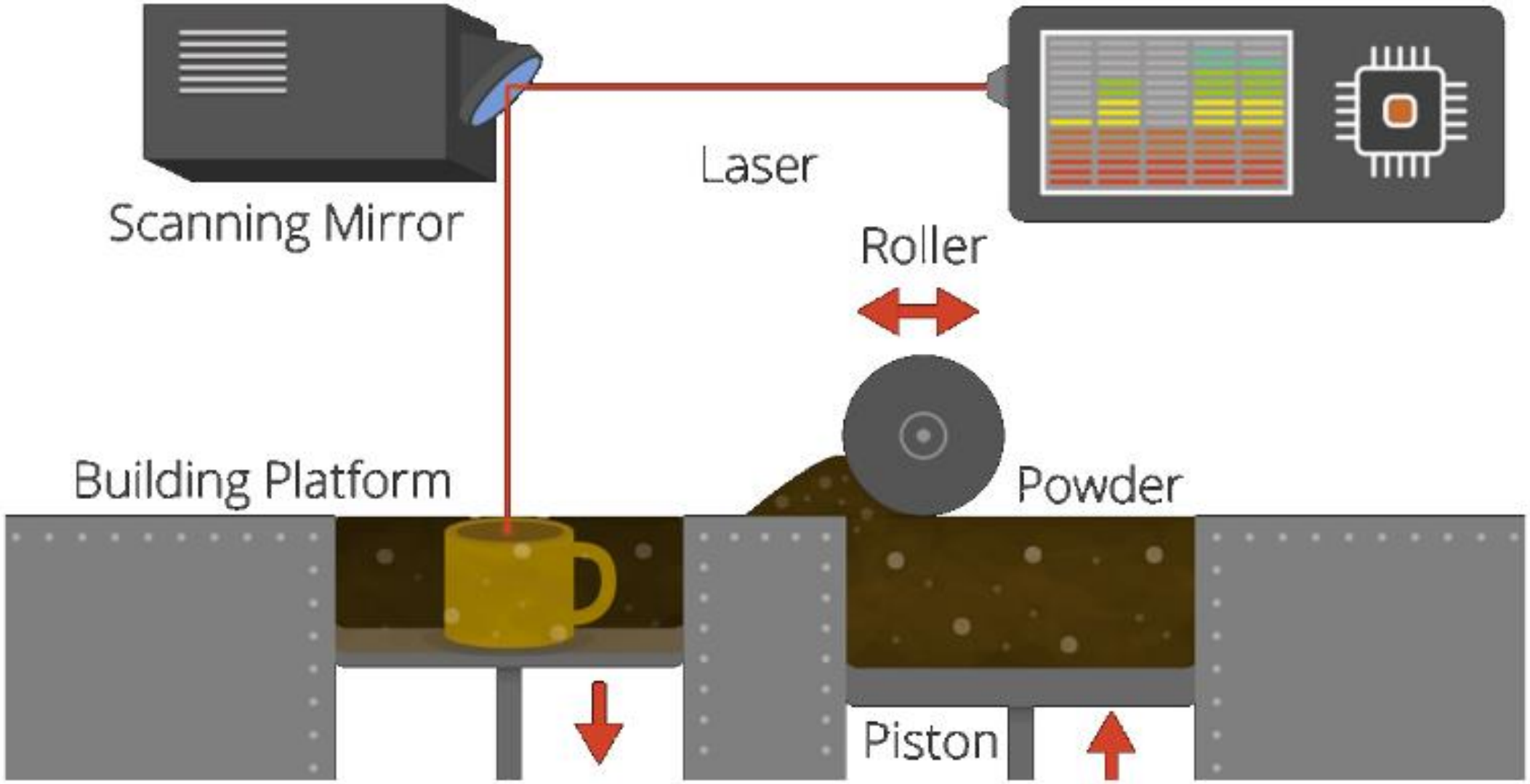
Several ways to realize 3D objects –

✓ Selective laser sintering (SLS) : uses a high power laser to fuse input materials like plastic, metal, glass, etc. It scans the powdered material layer by layer.

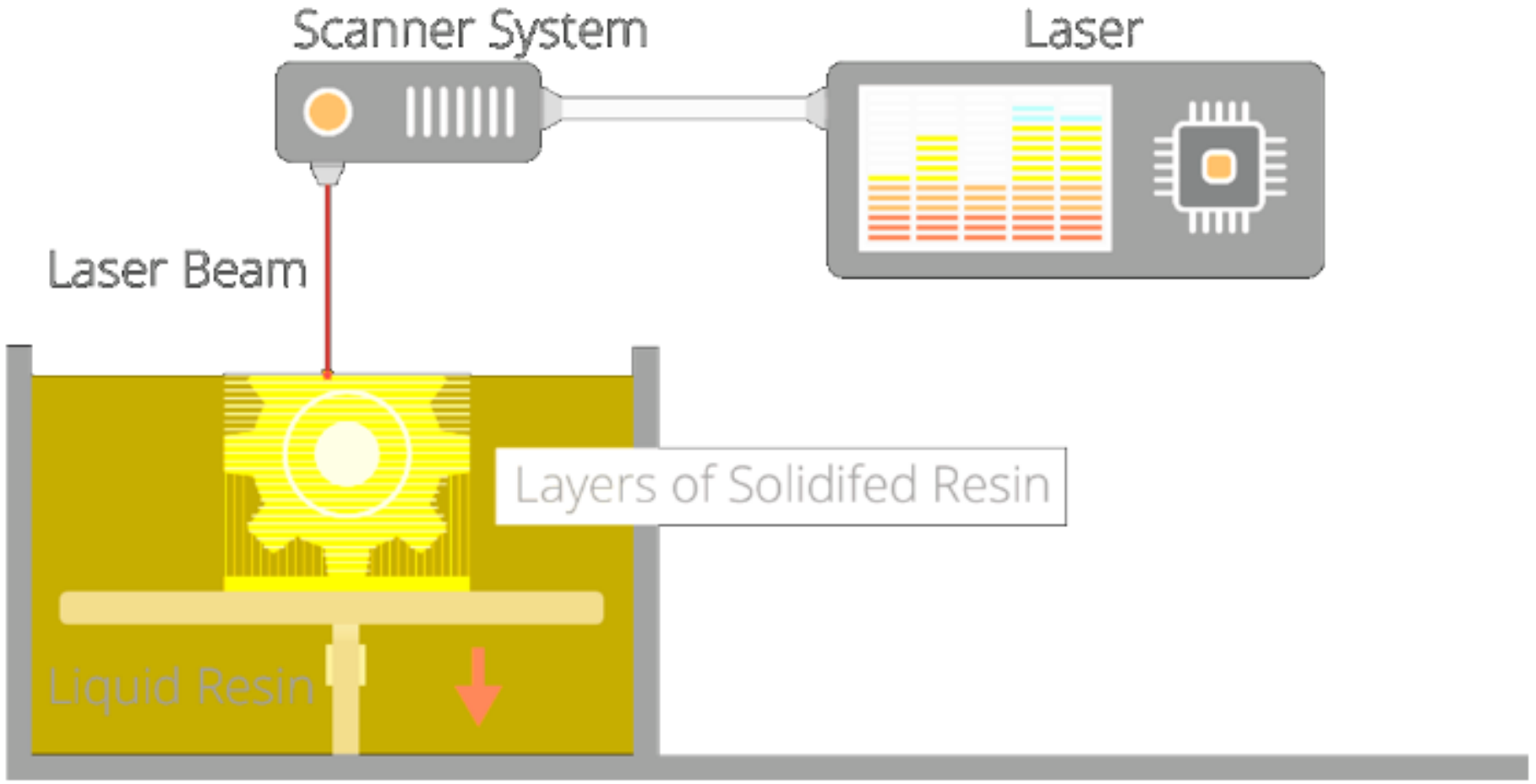
✓ Fused deposition modelling (FDM) : uses a plastic filament or metal wire as input material to an extrusion nozzle. The nozzle is heated to melt the material and can be moved in both horizontal and vertical directions by CAM. The material hardens immediately after extrusion from the nozzle.

✓ Stereolithography (SLA) : photopolymerization is used to produce a solid part from a liquid. This technology employs a vat of liquid ultraviolet curable photopolymer resin and an ultraviolet laser to build the object's layers one at a time. UV Laser solidifying the pattern.

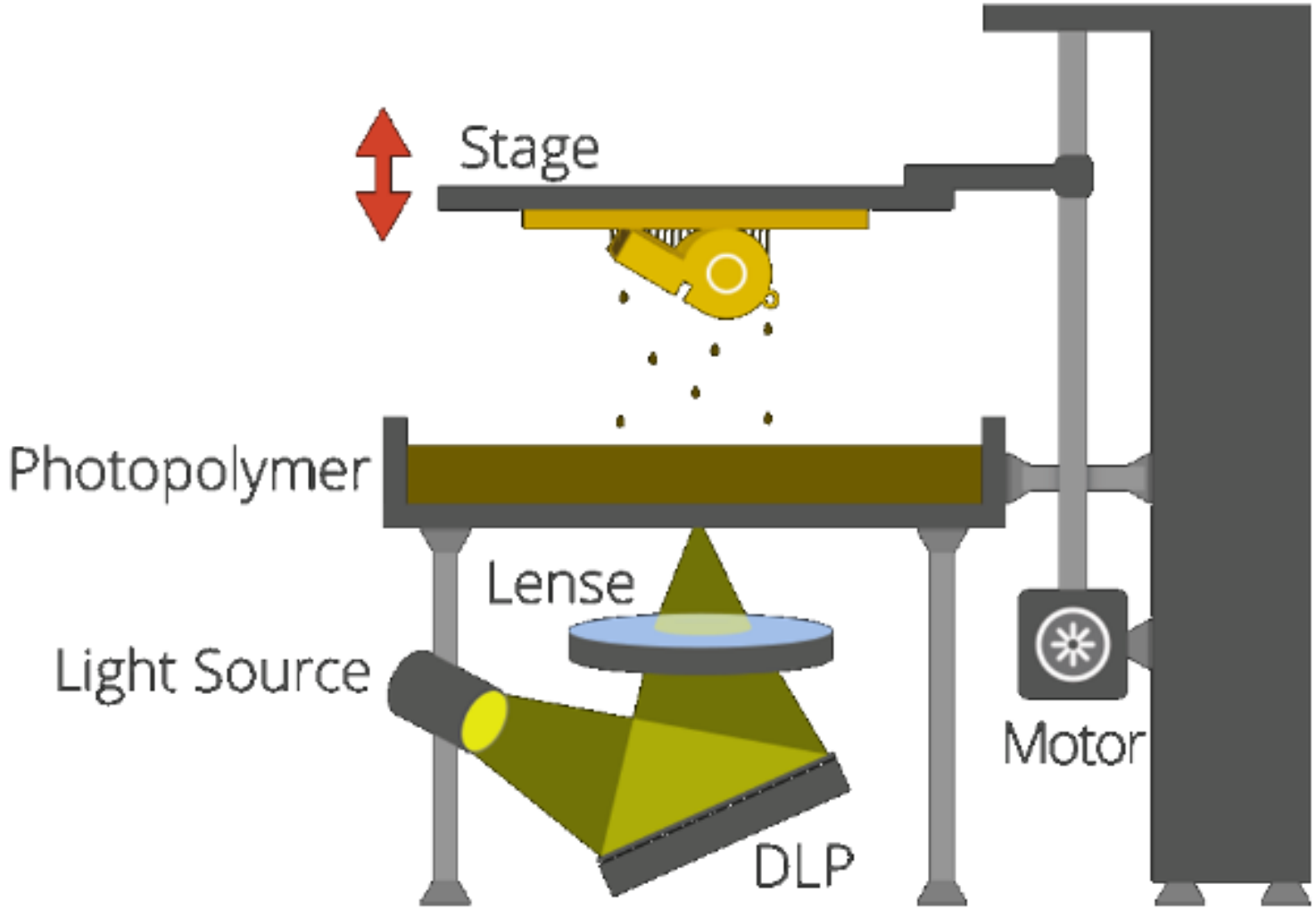
Selective laser sintering (SLS)



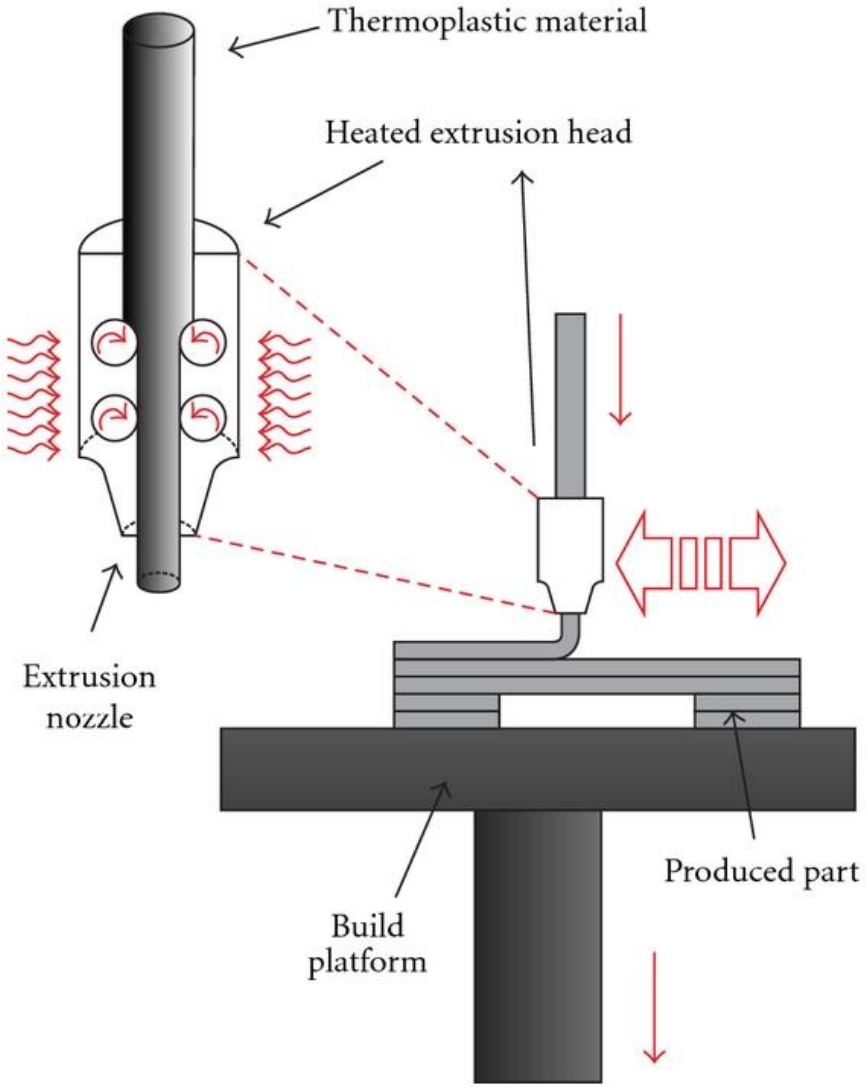
Selective laser sintering (SLS)



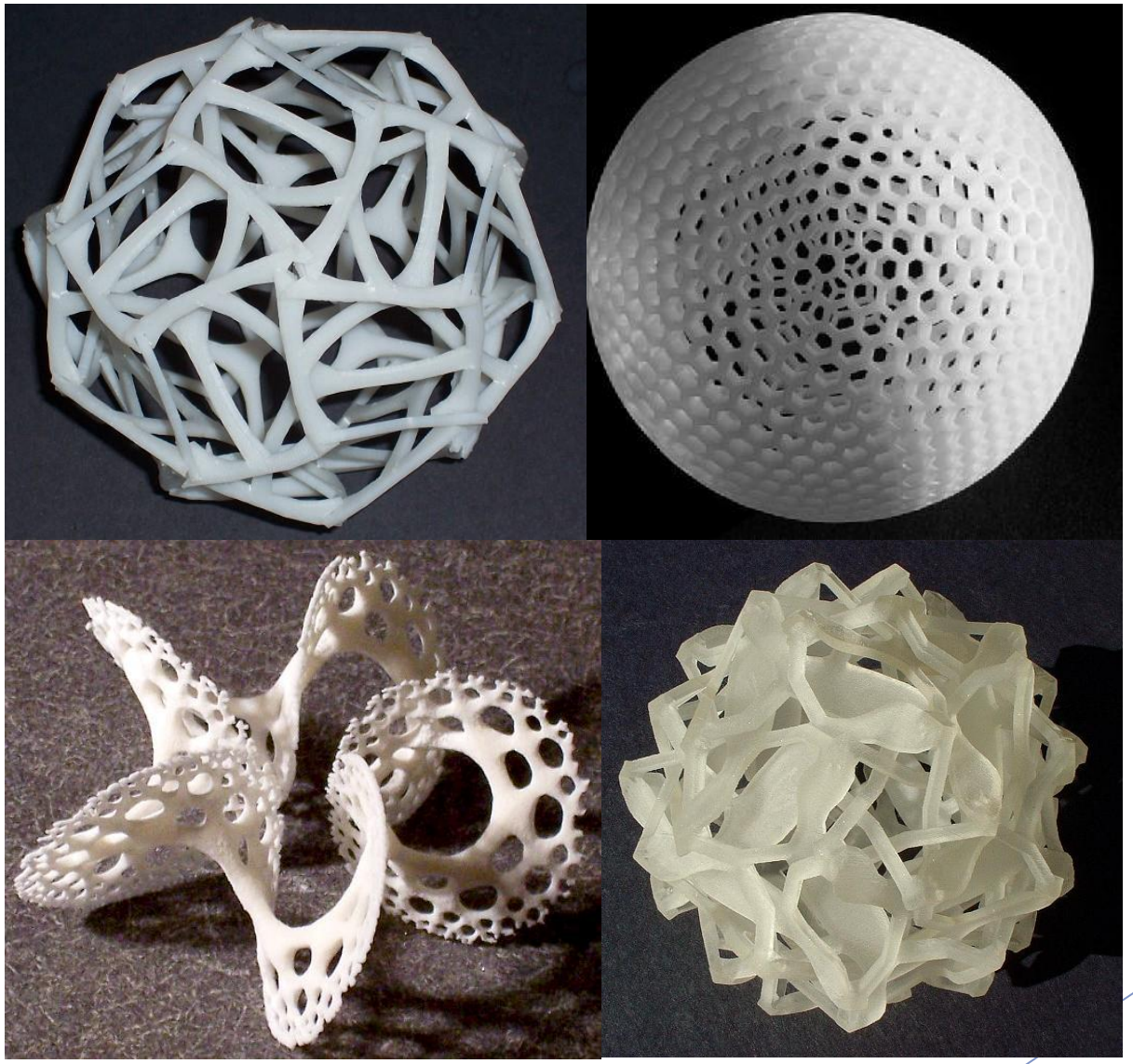
Stereolithography (SLA)



Fused deposition modelling (FDM)



Stereolithography (SLA)



Journals › additive manufacturing

Materials Today	The International Journal of Advanced…	Materials Science and Engineering C	Materials Research Letters
Advanced Materials	Materials & Design	Materials Horizons	Biomaterials Science
Journal of Cleaner Production	Materials Science and Engineering R:…	Biofabrication	Journal of Materials Chemistry B
Progress in Materials Science	Advances in Production Engineering …	Scripta Materialia	MRS Bulletin
Journal of Materials Science	JOM	Journal of Biomaterials Applications	Materials Letters
Biomedical Materials	Journal of Biomedical Materials Rese…	Journal of Alloys and Compounds	
Acta Biomaterialia	Dental Materials	Materials	
Technological Forecasting and Social …	Journal of Industrial Engineering and …	Procedia	

	Sourcerecord id	Source Title (Medline-sourced journals are indicated in Green)	Print-ISSN	E-ISSN	Active or Inactive	Titles discontinued by Scopus due to quality issues	Coverage	Article language in source (three-letter ISO language codes)	2016 CiteScore	2017 CiteScore	2018 CiteScore	Medline-sourced Title? (see more info under separate tab)	Open Access status, i.e., registered in DOAJ and/or ROAD. Status September 2019	Articles in Press included?	Added to list September 2019	S
2	18500162600	21st Century Music	15343219		Inactive		2002-2011	ENG								J
3	21100404576	2D Materials		20531583	Active		2014-ongoing	ENG	4.26	6.05	6.77					J
4	21100447128	3 Biotech	2190572X	21905738	Active		2015-ongoing	ENG	2.15	2.23	2.61		DOAJ/ROAD Open Access	Articles in press		J
5	21100779062	3D Printing and Additive Manufacturing	23297662	23297670	Active		2014-ongoing	ENG	0.80	2.31	3.24					J
6	21100229836	3D Research		20926731	Active		2010-ongoing	ENG	0.62	1.02	1.67			Articles in Press		J
7	19700200922	3L: Language, Linguistics, Literature	01285157		Active		2008-ongoing	ENG	0.38	0.41	0.61		DOAJ/ROAD Open Access			J
8	145295	4OR	16194500	16142411	Active		2003-ongoing	ENG	1.83	1.47	2.33			Articles in Press		J
9	16400154734	A + U-Architecture and Urbanism	03899160		Active		2002-ongoing	JPN, ENG	0.01	0.02	0.01					J
10	5700161051	A Contrario	16607880		Active		2009-ongoing, 2003-2007	FRE, ENG	0.00	0.05	0.04					J
11	21100399164	A&A case reports	23257237		Inactive		2015-2017	ENG	0.53	0.66		Medline-sourced				J
12	21100881366	A&A practice		25753126	Active		2018-ongoing	ENG			0.64	Medline-sourced				J
13	19600162043	A.M.A. American Journal of Diseases of Children	00968994		Inactive		1945-1955									J
14	19400157806	A.M.A. archives of dermatology	00965359		Inactive		1955-1959									J
15	19600162081	A.M.A. Archives of Dermatology and Syphilology	00965979		Inactive		1950-1954									J
16	19400157807	A.M.A. archives of industrial health	05673933		Inactive		1954-1960									J
17	19600162082	A.M.A. Archives of Industrial Hygiene and Occupational Medicine	00966703		Inactive		1950-1954									J
18	19400157808	A.M.A. archives of internal medicine	08882479		Inactive		1950-1959									J
19	19400158171	A.M.A. archives of neurology	03758540		Inactive		1959-1960									J
20	19400157809	A.M.A. archives of neurology and psychiatry	00966886		Inactive		1950-1959									J

Example of 3D Printing Journal

3D Printing and Additive Manufacturing

Country	United States - SIR Ranking of United States
Subject Area and Category	Engineering Industrial and Manufacturing Engineering Materials Science Materials Science (miscellaneous)
Publisher	Mary Ann Liebert Inc.
Publication type	Journals
ISSN	23297662, 23297670
Coverage	2014-ongoing
Scope	3D Printing and Additive Manufacturing is the only peer-reviewed journal on the rapidly moving field of 3D printing and related technologies. The Journal provides comprehensive coverage of academic research and industrial and commercial developments that have applications in medicine, education, food, and architecture. It also explores emerging challenges and opportunities ranging from new developments of processes and materials, to new simulation and design tools, and informative applications and case studies. The Journal addresses the important questions surrounding this powerful and growing field, including issues in policy and law, intellectual property, data standards, safety and liability, environmental impact, social, economic, and humanitarian implications, and emerging business models at the industrial and consumer scales. 3D Printing and Additive Manufacturing coverage includes: Novel additive manufacturing processes and techniques, Improvements of established methods and materials, Modeling and simulation of additive manufacturing processes, New materials, meta-materials, digital materials, lattices, and multi-material printing , Active and electronic materials fabrication, Hybrid additive and conventional manufacturing, Medical applications of 3D printing and bio-printing, Application of 3D printing in education, Advanced methods in product lifecycle design, testing and adaptation, Material mechanical properties, solidification processes for powders, liquids, and solids, Rapid tooling, remote manufacturing, Economic and social, and humanitarian considerations of democratizing manufacturing, Advances in personal 3D Printers and consumer adoption, Mass customization, new business models, Material performance standards and data exchange formats.
	Homepage How to publish in this journal Contact

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H Index

Example of 3D Printing Journal

Additive Manufacturing

Country	Netherlands - SIR Ranking of Netherlands
Subject Area and Category	Engineering Biomedical Engineering Engineering (miscellaneous) Industrial and Manufacturing Engineering Materials Science Materials Science (miscellaneous)
Publisher	Elsevier BV
Publication type	Journals
ISSN	22148604
Coverage	2014-ongoing
Scope	Additive Manufacturing is the peer-reviewed journal that provides academia and world-leading industry with high quality research papers and reviews in additive manufacturing. The journal aims to acknowledge the innovative nature of additive manufacturing and its broad applications to outline the current and future developments in the field.

Homepage

How to publish in this journal

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Join the conversation about this journal

31

H Index

Journal Metrics

CiteScore: **9.62**

Impact Factor: **7.173**

Source Normalized Impact per Paper (SNIP): **3.085**

SCImago Journal Rank (SJR): **2.591**

Applicable Research Fields (EX)

1- Computer Science, Software Engineering And Information Technology

2- Computer Engineering & Robotics

3- Mechanical Engineering

4- Electrical And Electronic Engineering

5- Medical And Dental

6- Chemical Engineering

7- Physics

8- Civil Engineering, Structural Engineering and Construction

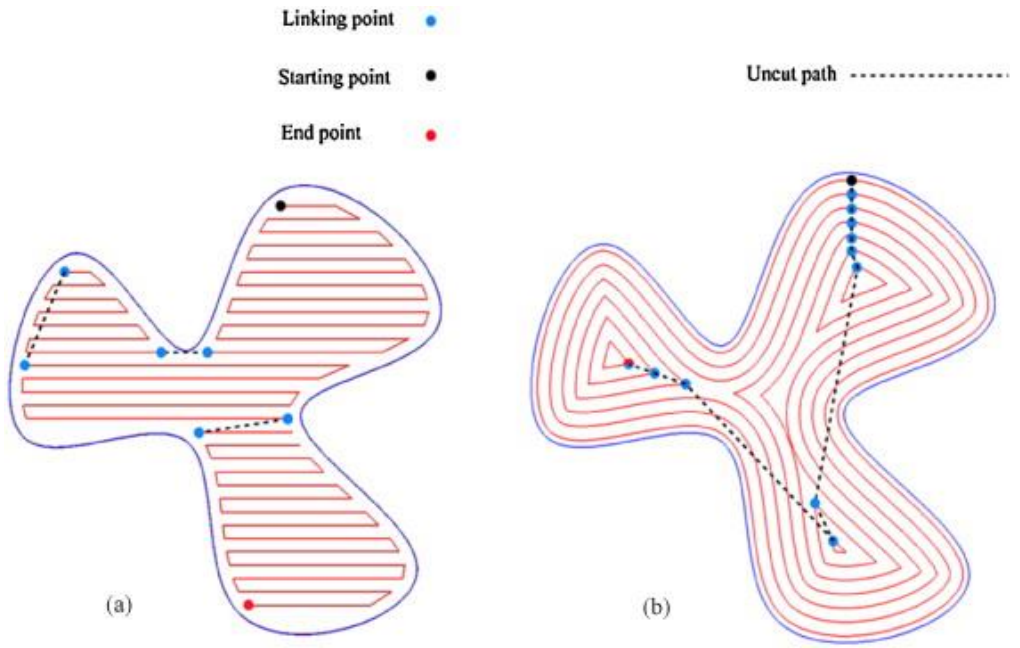
9- Metallurgy

10- Aerospace

11- Mathematics

12- Art

1- Computer Science, Software Engineering And Information Technology



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Additive Manufacturing
Volumes 1–4, October 2014, Pages 32-47

Optimization of tool-path generation for material extrusion-based additive manufacturing technology ☆

Yu-an Jin [a, b], Yong He [a, b] ✉, Jian-zhong Fu [a, b], Wen-feng Gan [a, b], Zhi-wei Lin [a, b]

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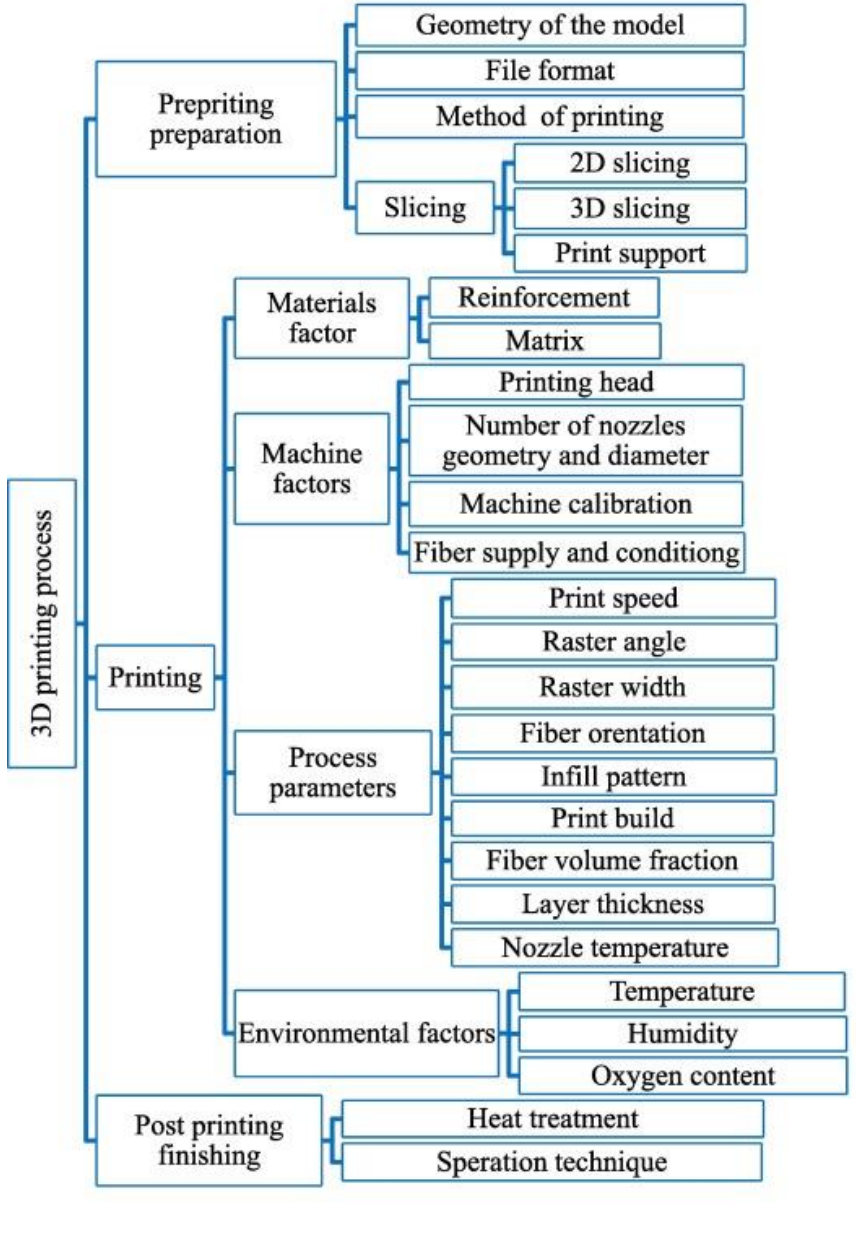
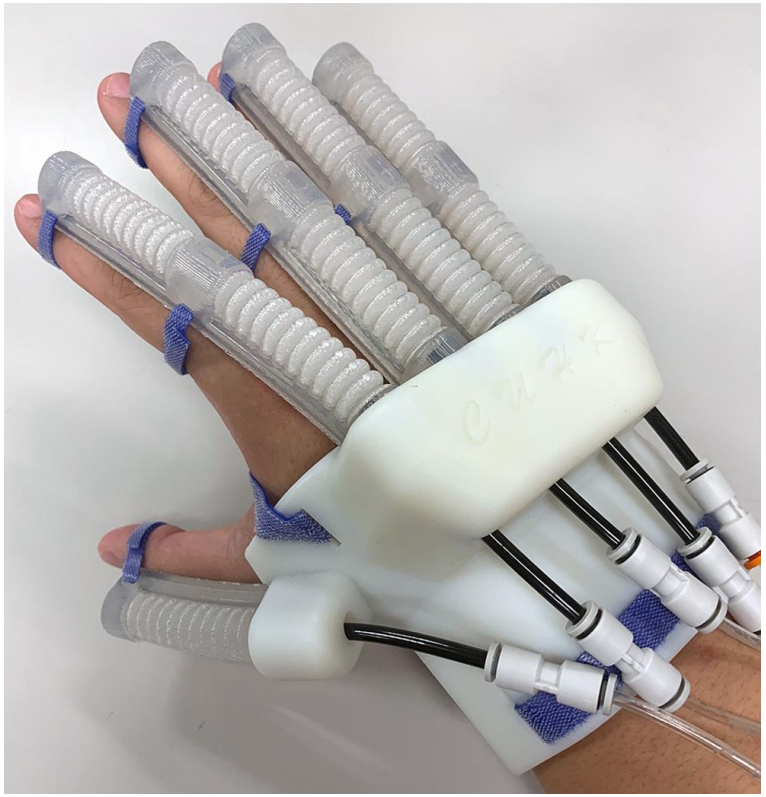
https://doi.org/10.1016/j.addma.2014.08.004



2- Computer Engineering & Robotics



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Displays

Volume 39, October 2015, Pages 55-67

Anaglyph video smell presentation using micro-porous piezoelectric film olfactory display

Saad Hameed Abid [a, b], Zhiyong Li [a], Renfa Li [a], Jumana Waleed [c]

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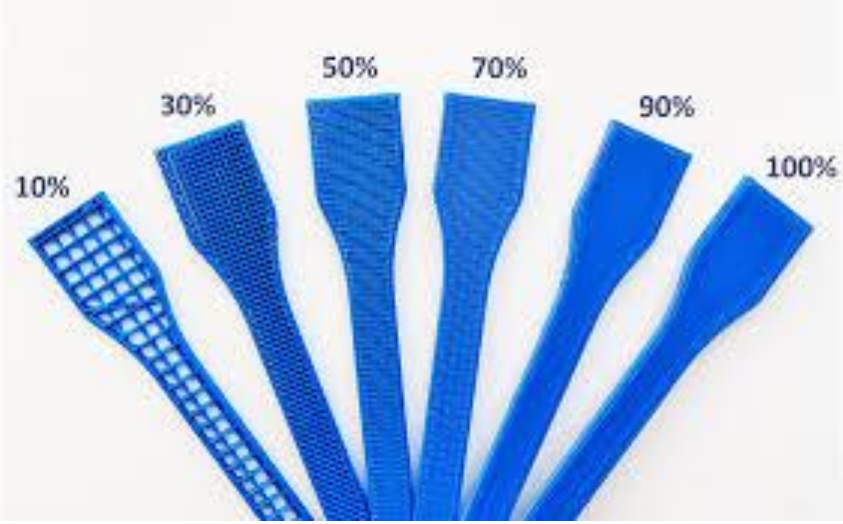
https://doi.org/10.1016/j.displa.2015.08.004

3- Mechanical Engineering



ELSEVIER

Composites Part B: Engineering

Volume 188, 1 May 2020, 107894

Tensile failure strength and separation angle of FDM 3D printing PLA material: Experimental and theoretical analyses

Tianyun Yao [a, b], Juan Ye [a, b], Zichen Deng [a, b], Kai Zhang [a, b], Yongbin Ma [a, b], Huajiang Ouyang [c]

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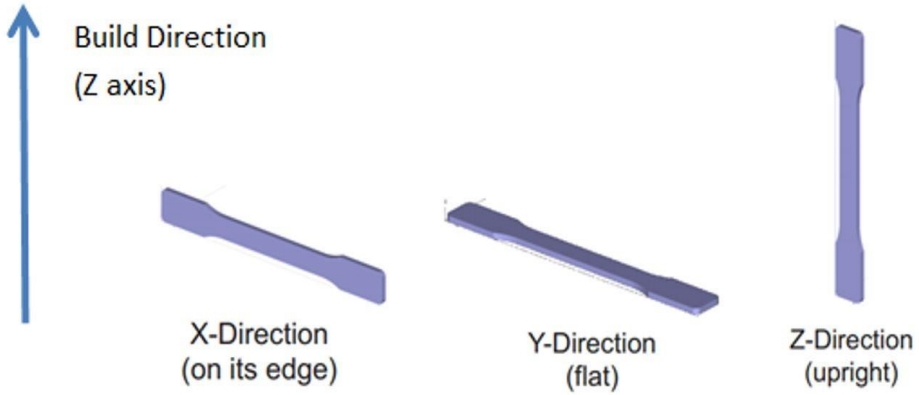
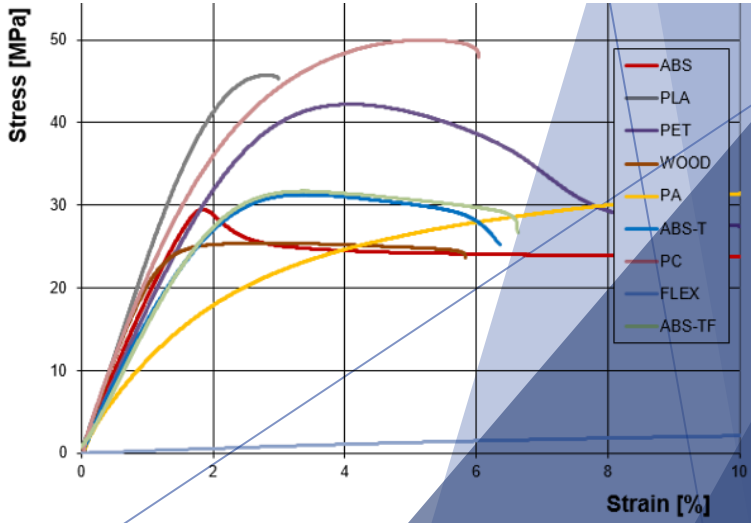
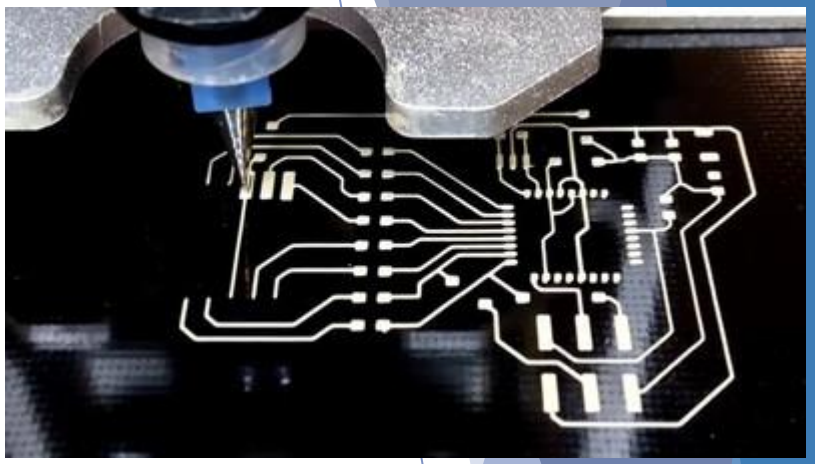
https://doi.org/10.1016/j.compositesb.2020.107894





4- Electrical And Electronic Engineering



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Nano Energy

Volume 72, June 2020, 104676

All 3D-printed stretchable piezoelectric nanogenerator with non-protruding kirigami structure

Xinran Zhou [a, b], Kaushik Parida [a], Oded Halevi [a, b, c], Yizhi Liu [d], Jiaqing Xiong [a], Shlomo Magdassi [b, c] ✉, Pooi See Lee [a, b] ✉

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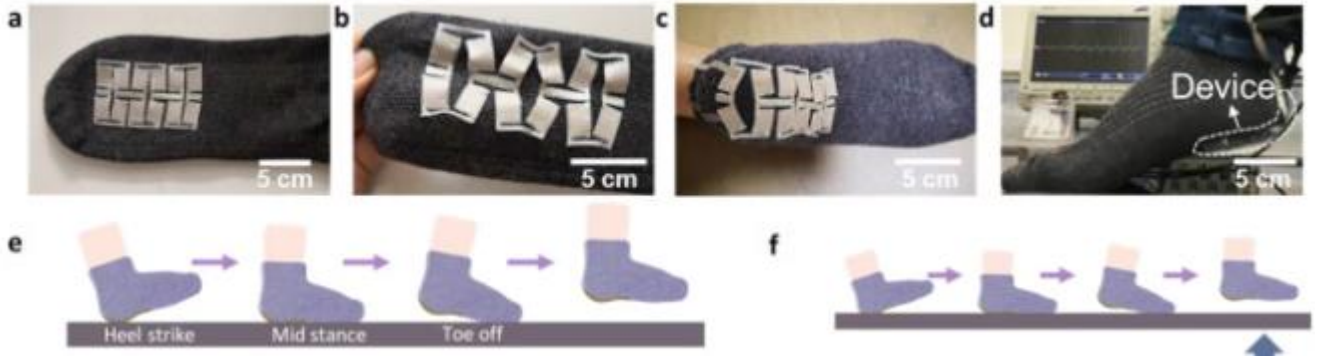
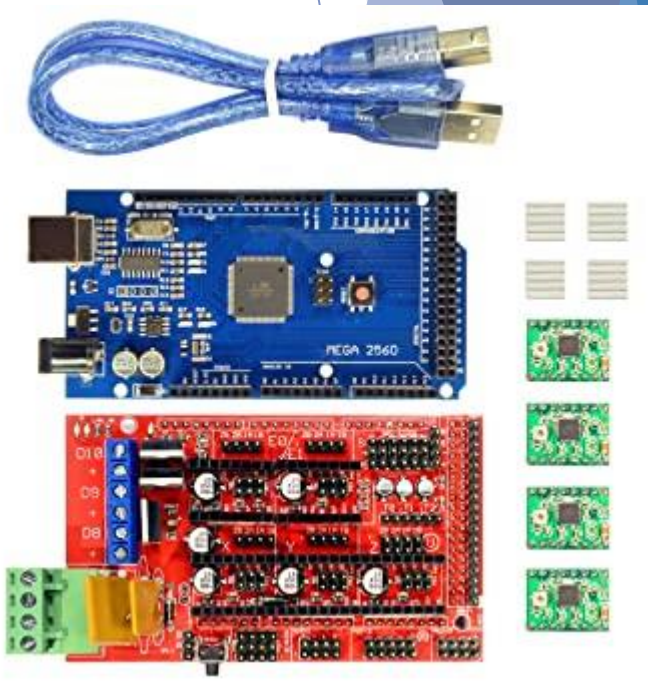
https://doi.org/10.1016/j.nanoen.2020.104676





5- Medical And Dental

Journal of Surgical Education
Available online 6 April 2020
In Press, Corrected Proof

ORIGINAL REPORTS

3D Printing Technology Improves Medical Interns' Understanding of Anatomy of Gastrocolic Trunk

Yigang Chen *, [1], Chunxiang Qian †, [1], Ruizhi Shen ‡, Danping Wu §, Linjie Bian §, Huiheng Qu *, Xinqi Fan *, Zhequn Liu ‖, Yang Li †, Jiazeng Xia *

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https://doi.org/10.1016/j.jsurg.2020.02.031

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6- Chemical Engineering

	 ABS	 Flexible	 PLA	 HIPS	 PETG	 Nylon	 Carbon Fiber Filled	 ASA	 Polycarbonate	 Polypropylene	 Metal Filled	 Wood Filled	 PVA
	Learn More	Learn More	Learn More	Learn More	Learn More	Learn More	Learn More	Learn More	Learn More	Learn More	Learn More	Learn More	Learn More
Compare Selected	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Ultimate Strength	40 MPa	26 - 43 MPa	65 MPa	32 MPa	53 MPa	40 - 85 MPa	45 - 48 MPa	55 MPa	72 MPa	32 MPa	20 - 30 MPa	46 MPa	78 MPa
Stiffness	5 / 10	1 / 10	7.5 / 10	10 / 10	5 / 10	5 / 10	10 / 10	5 / 10	6 / 10	4 / 10	10 / 10	8 / 10	3 / 10
Durability	8 / 10	9 / 10	4 / 10	7 / 10	8 / 10	10 / 10	3 / 10	10 / 10	10 / 10	9 / 10	4 / 10	3 / 10	7 / 10
Maximum Service Temperature	98 °C	60 - 74 °C	52 °C	100 °C	73 °C	80 - 95 °C	52 °C	95 °C	121 °C	100 °C	52 °C	52 °C	75 °C
Coefficient of Thermal Expansion	90 µm/m-°C	157 µm/m-°C	68 µm/m-°C	80 µm/m-°C	60 µm/m-°C	95 µm/m-°C	57.5 µm/m-°C	98 µm/m-°C	69 µm/m-°C	150 µm/m-°C	33.75 µm/m-°C	30.5 µm/m-°C	85 µm/m-°C
Density	1.04 g/cm³	1.19 - 1.23 g/cm³	1.24 g/cm³	1.03 - 1.04 g/cm³	1.23 g/cm³	1.06 - 1.14 g/cm³	1.3 g/cm³	1.07 g/cm³	1.2 g/cm³	0.9 g/cm³	2 - 4 g/cm³	1.15 - 1.25 g/cm³	1.23 g/cm³
Price (per kg)	$10 - $40	$30 - $70	$10 - $40	$24 - $32	$20 - $60	$25 - $65	$30 - $80	$38 - $40	$40 - $75	$60 - $120	$50 - $120	$25 - $55	$40 - $110
Printability	8 / 10	6 / 10	9 / 10	6 / 10	9 / 10	8 / 10	8 / 10	7 / 10	6 / 10	4 / 10	7 / 10	8 / 10	5 / 10
Extruder Temperature	220 - 250 °C	225 - 245 °C	190 - 220 °C	230 - 245 °C	230 - 250 °C	220 - 270 °C	200 - 230 °C	235 - 255 °C	260 - 310 °C	220 - 250 °C	190 - 220 °C	190 - 220 °C	185 - 200 °C
Bed temperature	95 - 110 °C	45 - 60 °C	45 - 60 °C	100 - 115 °C	75 - 90 °C	70 - 90 °C	45 - 60 °C	90 - 110 °C	80 - 120 °C	85 - 100 °C	45 - 60 °C	45 - 60 °C	45 - 60 °C
Heated Bed	Required	Optional	Optional	Required	Required	Required	Optional	Required	Required	Required	Optional	Optional	Required
Recommended Build Surfaces	Kapton Tape, ABS Slurry	PEI, Painter's Tape	Painter's Tape, Glue Stick, Glass Plate, PEI	Glass Plate, Glue Stick, Kapton Tape	Glue Stick, Painter's Tape	Glue Stick, PEI	Painter's Tape, Glue Stick, Glass Plate, PEI	Glue Stick, PEI	PEI, Commercial Adhesive, Glue Stick	Packing Tape, Polypropylene Sheet	Painter's Tape, Glue Stick, PEI	Painter's Tape, Glue Stick, PEI	PEI, Painter's Tape
Other Hardware Requirements	Heated Bed, Enclosure Recommended	Part Cooling Fan	Part Cooling Fan	Heated Bed, Enclosure Recommended	Heated Bed, Part Cooling Fan	Heated Bed, Enclosure Recommended, May Require All Metal Hotend	Part Cooling Fan	Heated Bed	Heated Bed, Enclosure Recommended, All Metal Hotend	Heated Bed, Enclosure Recommended, Part Cooling Fan	Wear Resistant or Stainless Steel Nozzle, Part Cooling Fan	Part Cooling Fan	Heated Bed, Part Cooling Fan

6- Chemical Engineering

1st European Forum on New Technologies - *Chemical Engineering and 3D Printing*

7 September 2018, Paris, France

Journal of the European Ceramic Society
Volume 40, Issue 8, July 2020, Pages 2834-2854

Original Article

Synthesis and properties of macroporous SiC ceramics synthesized by 3D printing and chemical vapor infiltration/deposition

A. Baux [a], A. Goillot [a], S. Jacques [a], C. Heisel [b], D. Rochais [b], L. Charpentier [c], P. David [b], T. Piquero [b], T. Chartier [d], G. Chollon [a]

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https://doi.org/10.1016/j.jeurceramsoc.2020.03.001

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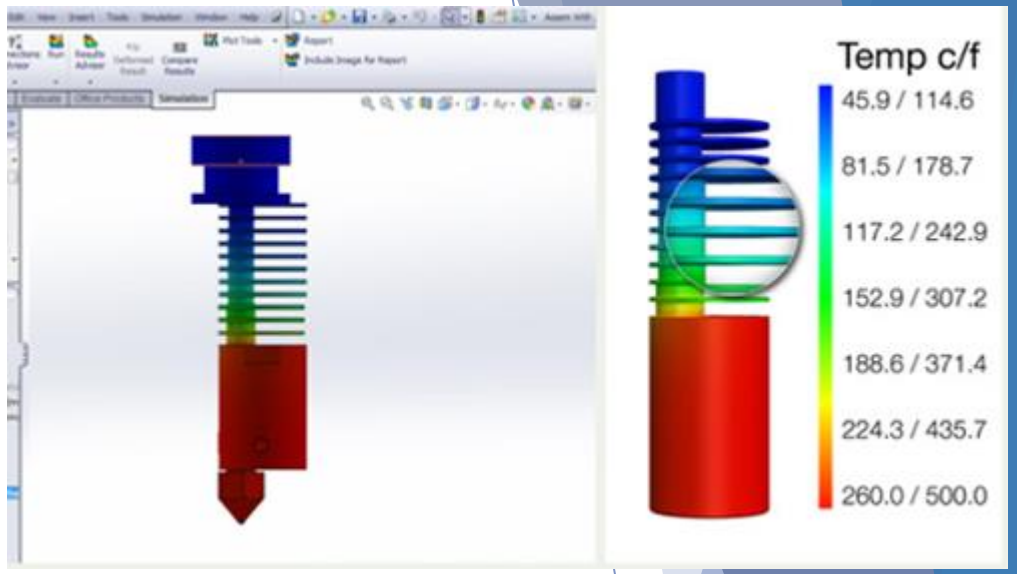
7- Physics



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Materials Science and Engineering: C

Volume 101, August 2019, Pages 15-26

Engineering a multifunctional 3D-printed PLA-collagen-minocycline-nanoHydroxyapatite scaffold with combined antimicrobial and osteogenic effects for bone regeneration

Victor Martin [a], Isabel A. Ribeiro [a], Marta M. Alves [b], Lídia Gonçalves [a], Ricardo A. Claudio [c, d], Liliana Grenho [e, f], Maria H. Fernandes [e, f], Pedro Gomes [e, f], Catarina F. Santos [b, c] [1] ✉, Ana F. Bettencourt [a] [1] ✉

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https://doi.org/10.1016/j.msec.2019.03.056

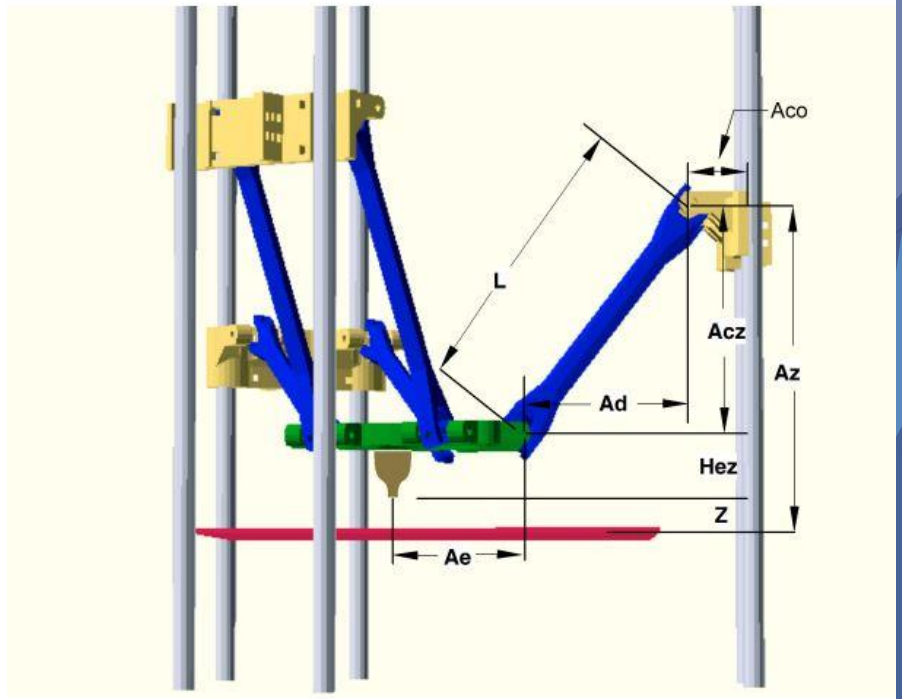
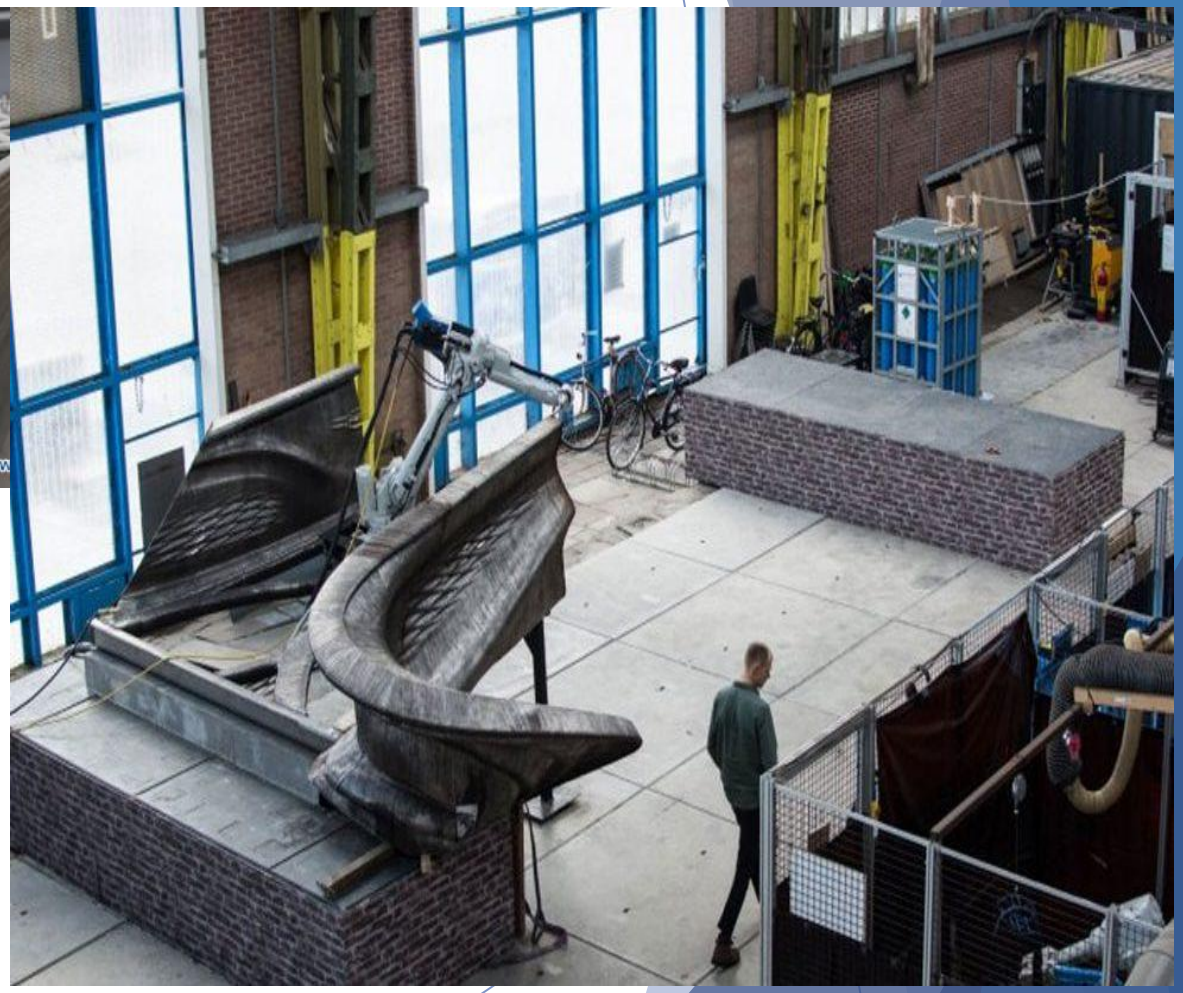


Fig. 4

8- Civil Engineering, Structural Engineering and Construction



ELSEVIER

Construction and Building Materials

Volume 179, 10 August 2018, Pages 125-137

3D-printed steel reinforcement for digital concrete construction – Manufacture, mechanical properties and bond behaviour

Viktor Mechtcherine [a], Jasmin Grafe [a], Venkatesh N. Nerella [a], Erik Spaniol [b], Martin Hertel [b], Uwe Füssel [b]

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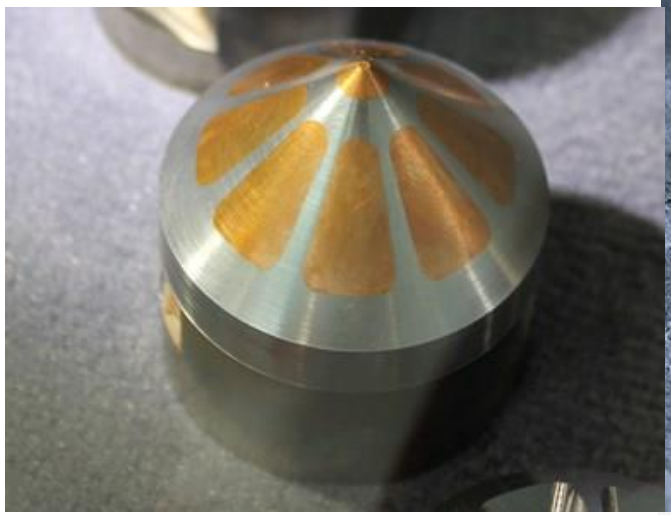
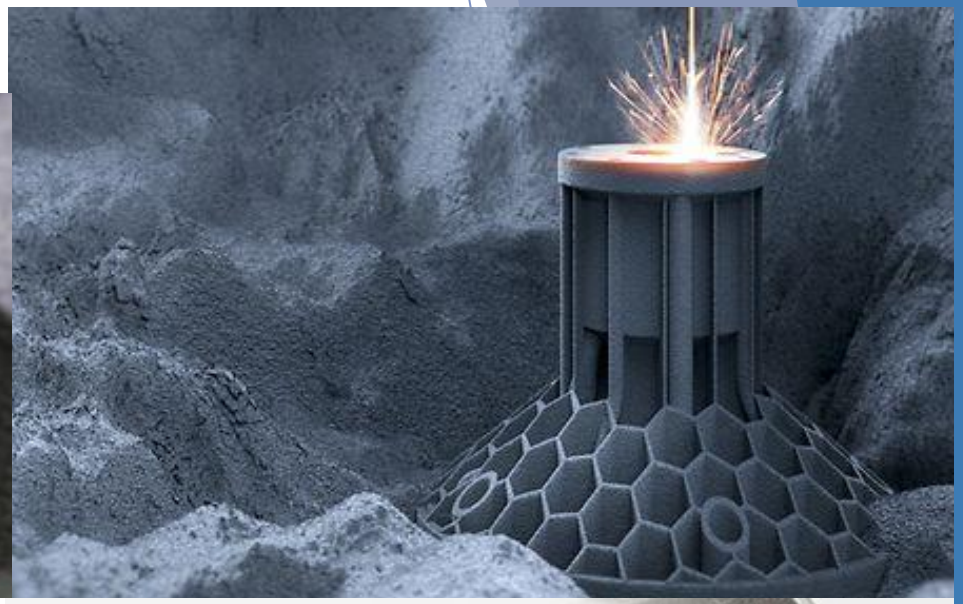
https://doi.org/10.1016/j.conbuildmat.2018.05.202

9- Metallurgy





materialstoday:
PROCEEDINGS
Available online 5 March 2020
In Press, Corrected Proof ⓘ

Atomization processes of metal powders for 3D printing

Kazybek Kassym, Asma Perveen

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https://doi.org/10.1016/j.matpr.2020.02.364

10- Aerospace

Additive Manufacturing for the Aerospace Industry

1st Edition

★★★★★ 1 Review

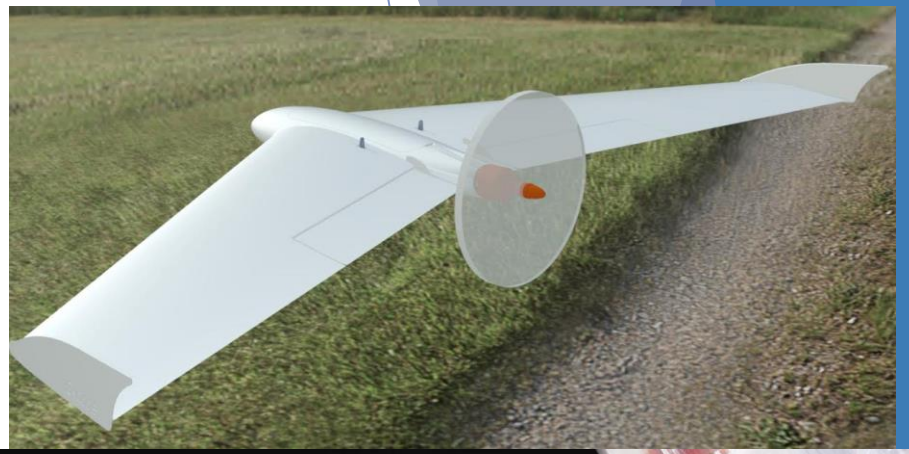
Editors: Francis Froes, Rodney Boyer

Paperback ISBN: 9780128140628
eBook ISBN: 9780128140635

Imprint: Elsevier
Published Date: 18th February 2019

View on ScienceDirect

Google Preview



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27 May 2020

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12-Art

The use of 3D printing technologies in art casting

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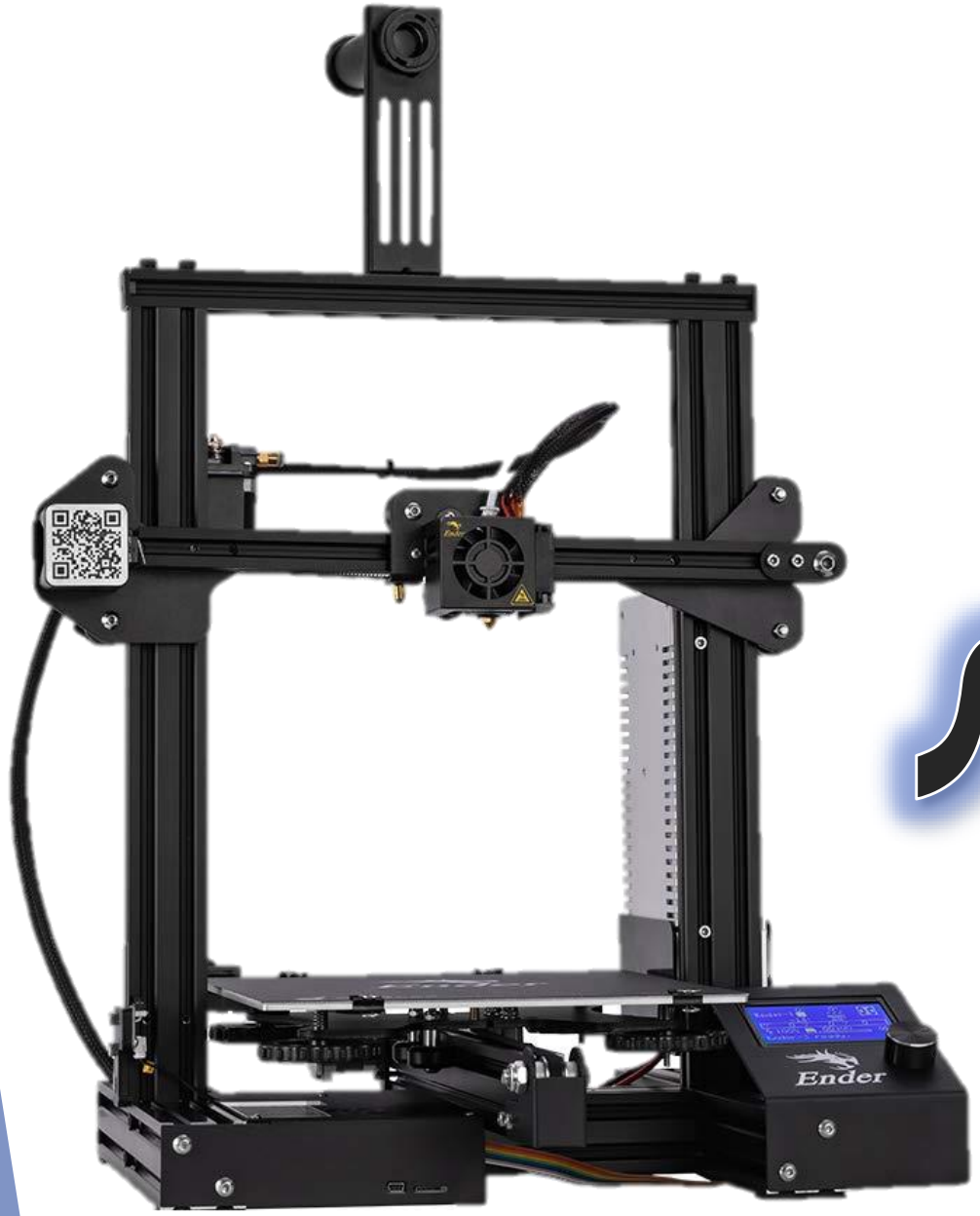
Keywords: 3D printing, lost-wax method, art casting

Abstract



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