

Make Your Own Wearables Workshop

INTRO TO MANUFACTURING

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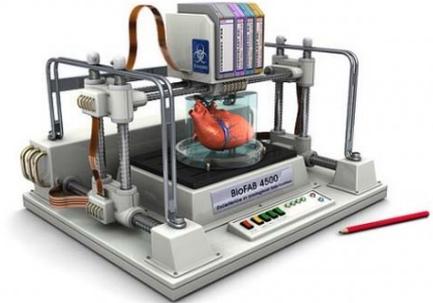
WHAT comes to mind when you hear “3D Printing”?



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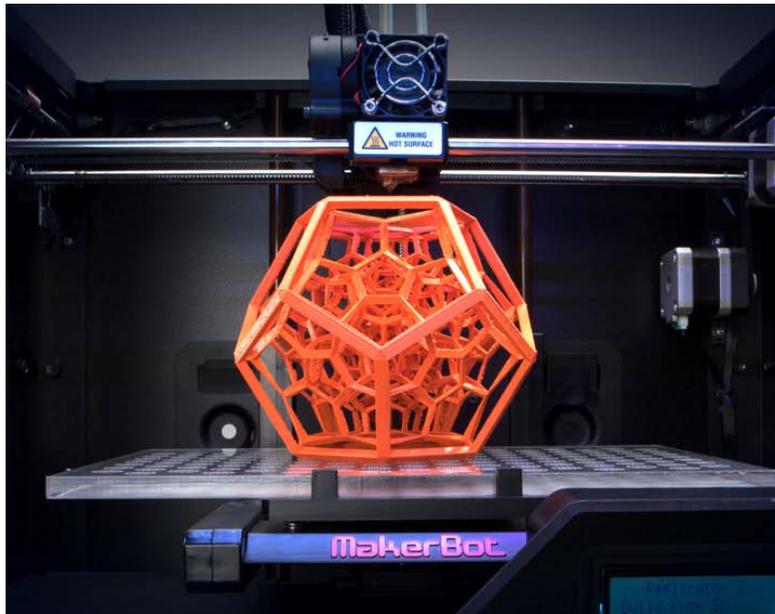


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...Creating a physical object from a three-dimensional digital model, usually done by laying down many thin layers of a material



Additive versus Subtractive Manufacturing



Fuses layers of material together

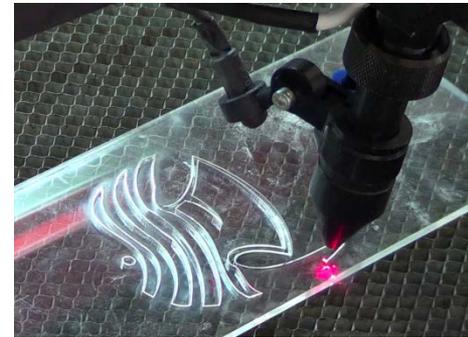
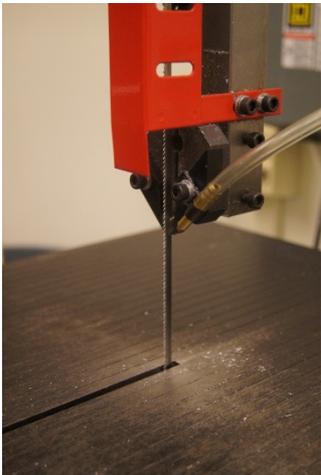


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Subtractive Manufacturing Tools



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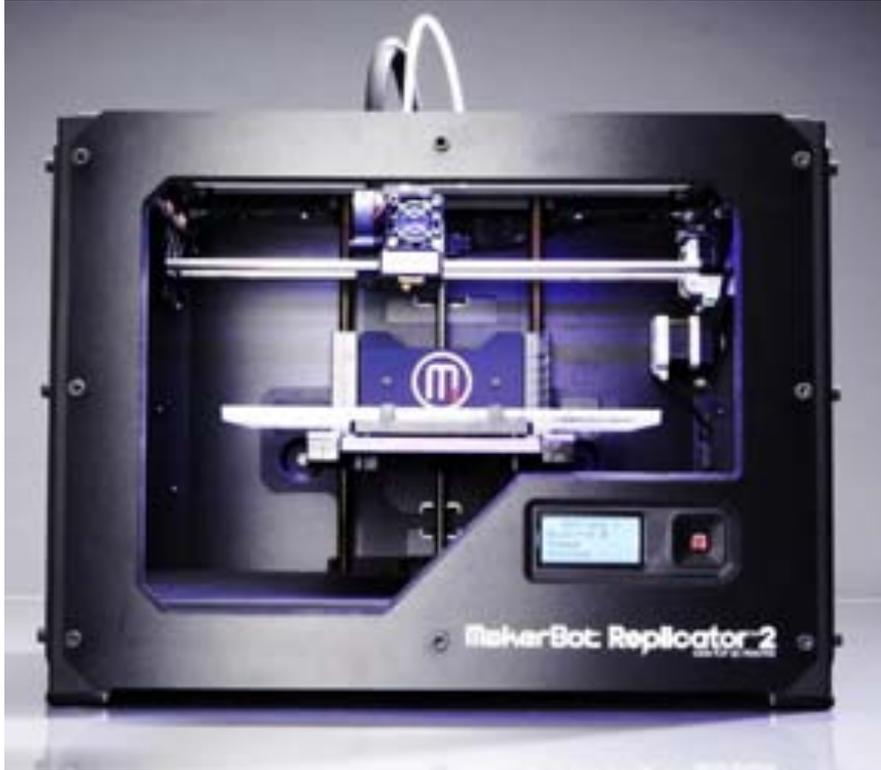


Advantages to Subtractive Manufacturing

- Part quality and finish
- Strength of part
- More material choices
- High precision
- Cost effective for large part runs
- Best for simple repetitive designs

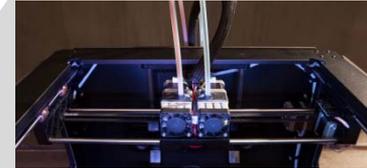


Parts of a 3d Printer



Courtesy of MakerBot®. Used with permission.

Print Head



Courtesy of MakerBot®. Used with permission.

Print Bed



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Filament



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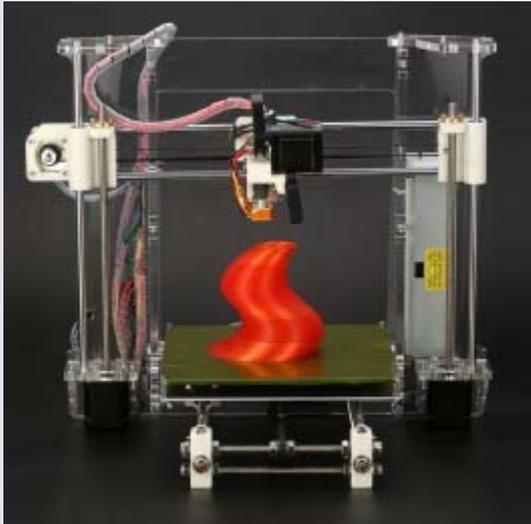
Advantages to Additive Manufacturing

- On demand with quick turn around
- Customization of part
- More complex and unique designs
- Good for prototyping where multiple iterations are needed
- Best choice for single or small batches of parts



Fused deposition Modeling (FDM)

Spools of plastic are melted down and extruded onto a build platform



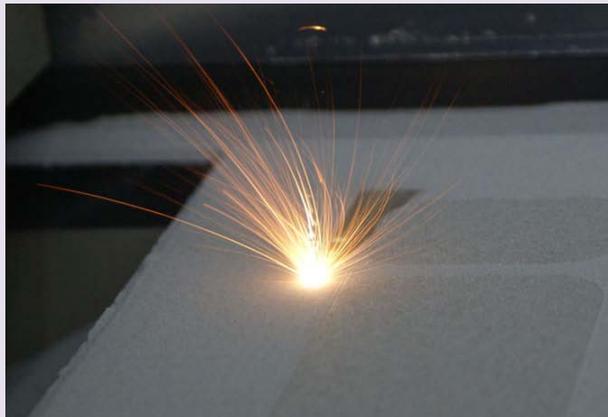
Stereolithography (SLA)

Build plate drops into a vat of resin where a laser from below cures liquid resin using a ultraviolet(UV) light



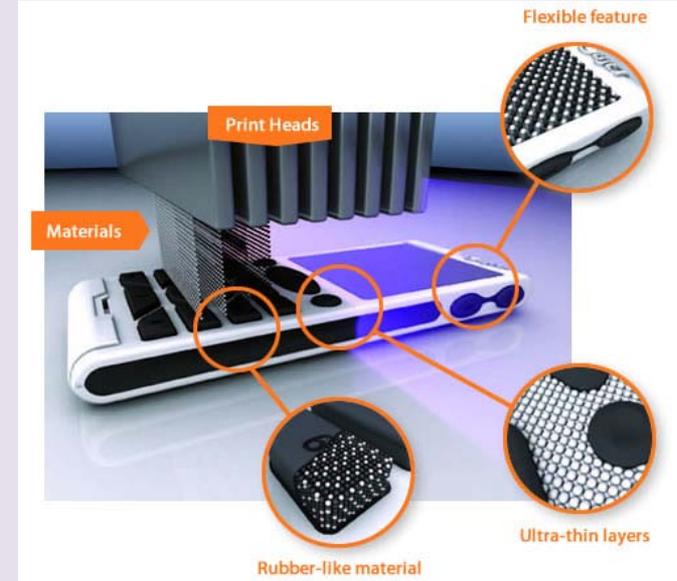
Selective Laser Sintering (SLS or SL)

Uses a CO2 laser to heat and fuse durable thermoplastic powder



Polyjet

Jets and cures tiny micro droplets of liquid photopolymer



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Thermoplastic materials are moldable when heated, solid when cooled

- **Polylactic acid(PLA):** Glossy, many colors, sharper corners, low warping
- **Acrylonitrile butadiene styrene (ABS):** Strong, high temperature resistance, machinable



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How to 3D Print a Bracelet

1) Design the bracelet with CAD software



2) Process the design file with MakerBot



3) Convert design file in G-code (blueprint)

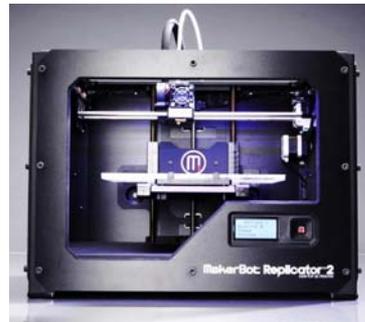


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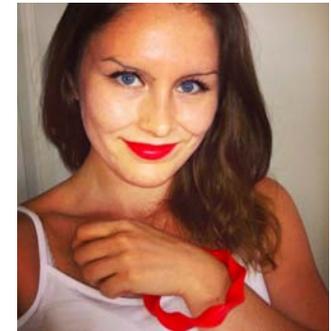
4) Select Material Type



5) Send to 3D Printer



6) Print the Bracelet



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