Filament Adhesive in the 3D Printer Industry (FDM)

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My invention is about filament adhesive which is related to the environment. This invention is derived from adhesive waste materials, which instead of producing waste materials, I was able to convert it into glue and use adhesive materials for 3D printers themselves, whose quality is better and environmentally friendly, and can be considered an innovation in the environment. It is also renewable and I am proud to have produced a material that meets the world standard in every way.

With the advent of the 3d printing industry the need for high quality materials and adhesives that in addition to being of high quality due to the use of chemicals also prevent the risk of respiratory problems. The claimed invention of a type of adhesive for 3d printer products as well as it is used for gluing equipment that is highly renewable and minimizes damage to the environment due to its plant base.

It is also recyclable due to the fact that it has high quality and reduced respiratory damage such an environmentally friendly adhesive actually contains several major components this product is finally achieved. The product generally contains several major components including: Poly Lactic Acid (PLA), CH3CL3 (CHLOROFORM)

This product generally eliminates the usability of 3d printers and attachments and removes problems from its raw materials as well as being renewable.

Innovative Feature						
Improved manufacturing quality	Rapid absorption of materials and high adhesion	No damage to the respiratory system	Recycle ability without discarded material	Environmental compatibility	Better Build-in with the Printer	Name and Invention Number
					*	Adhesive for 3d printing us20130310507a1
*						Finishing system for 3d printed components wo2016022449a1
	*					3d printing powder compositions and methods of use wo2013043908a1
	*					Super glue cn103146312a

*	*	*	*	*	*	Filament adhesive

Comparison of Other Patents with Filament Adhesive In Terms of Innovative Features

In recently years, due to the increasing workload of individuals in society, social life has led to significant improvement in product yields. The designed adhesive is generally simple and yet highly functional. This adhesive generally has a built-in yet practical, structure that incorporates unique benefits and that clearly illustrate the capabilities of the system. Prevention of environmental pollution, waste from the consumption of gods made of poly lactic acid decomposed and disintegrated in the vicinity of the soil. To prevent greenhouse gas emissions industrial production of poly lactic acid requires the cultivation of plants used as a bulk feedstock

Adaptation to living tissue as raw materials for the production of plant lactic acid in packaging applications, do not transfer to packaging goods, especially food, chemicals and abnormal materials. Reducing the use of petroleum resources in production of poly lactic acid not only is oil not used as a feedstock but its production process but also require less fuel. Using renewable sources, plants can be produced and recycled as raw materials for the production of poly lactic acid. Each of these features alone can be a compelling reason to expand the production and application of poly lactic acid compared to today's plastics.

The advantages of this industrial application include the following:

Improved manufacturing quality

Better build-in with the printer

Environmental compatibility

Recycle ability without discarded material

No damage to the respiratory system

Has a structure that conforms to chemical standards

Rapid absorption of materials and high adhesion



FILAMENT ADHESIVE

T=25 °c

PLA + CHCL3 ⟶ FILAMENT GLUE

T= 20 min



PLA



THERMOMETER



COMPONENTS OF PLA AND CH3CL3



CHLOROFORM



Australian Government
IP Australia

CERTIFICATE OF GRANT

INNOVATION PATENT

Patent number: 2020103909

The Commissioner of Patents has granted the above patent on 27 January 2021, and certifies that the below particulars have been registered in the Register of Patents.

Name and address of patentee(s):

Mohammad Israr of Professor, Department of Mechanical Engineering, Poornima College of Engineering Jaipur Rajasthan India

Hadi Erfani of Department of Chemical Engineering, Central Tehran Branch, Islamic Azad University Tehran Iran, Islamic Republic of

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Aijaz Ahmad Reshi of Assistant Professor, Department of Computer Science, College of Computer Science & Engg. Taibah University Al Madinah Al Munawarah, Saudi Arabia

Title of invention:

FILAMENT GLUE FOR 3D PRINTER INDUSTRY (FDM)

Name of inventor(s):

Israr, Mohammad; Erfani, Hadi; Rahmani, Md Shibli; Arif, Muhammad; Huda, Mahfuzul and Reshi, Aijaz Ahmad

Term of Patent:

Eight years from 5 December 2020

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.

Dated this 27th day of January 2021

Commissioner of Patents

PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.



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No. 1203/IYSA-UNY/WYIIA/AWARD/VIII/2021

World Youth Invention and Innovation Award

Organized by : IYSA

Certificate of Award

is given to

Hadi Erfani

has been awarded the

BRONZE MEDAL

for the project

Filament Glue for 3D Printer Industry (FDM)

at World Youth Invention and Innovation Award 2021

Yogyakarta, Indonesia

August 17th – 21st, 2021

Prof. Dr. Sumaryanto, M.Kes.,AIFO.
Rector of Universitas Negeri Yogyakarta

Roberto Hidalgo
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FOR THE INVENTION:

FILAMENT GLUE FOR 3D PRINTERS INDUSTRY (FDM)

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Marlena Owczuk Ph.D. Eng.

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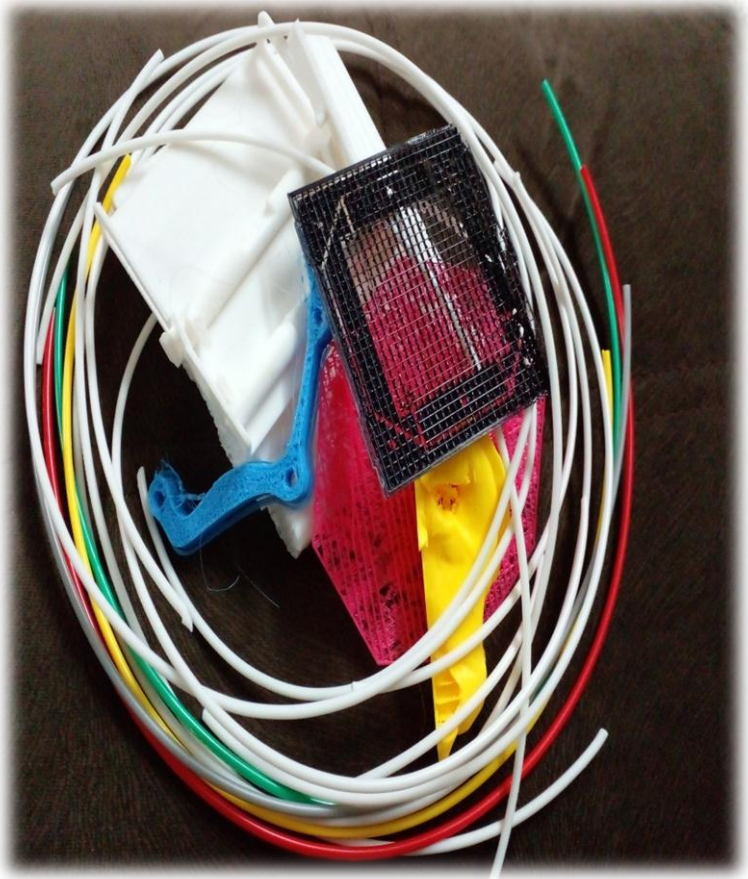
Awards the Gold Medal to
Hadi Erfani
From Iran
For the Innovation
Filament Glue for 3D Printer Industry (FDM)

Beirut, Lebanon
10 April 2021

President | Radwan Chouaib

nasr.org.lb

In this Invention, we were able to use the filament waste used as recycling as an adhesive for this 3d printer. Which was an evolution in the field of environment and sustainable development and reuse of materials.









Thank You So Much

My goal with this idea was to eliminate recycling in a 3d printer and instead of producing recycling and waste from raw materials. I turned it into glue for this machine so that I could use it as a required material instead of producing recycling and I am happy to do something for I did the environment and did not remove the recycling did not produce waste.