Applied Nanotech, Inc.
a PEN Inc company

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Cu-IJ70

Nanocopper Ink

ANI's Cu-IJ70 is a copper nanoparticle ink which is engineered to replace nanoparticle silver inks for printed electronics applications. Cu-IJ70 can be printed by inkjet and aerosol jet techniques and sintered to form conductive patterns on low temperatures substrate materials such as polyimide, liquid crystal polymer (LCP), and coated papers. The patterned copper ink can be photosintered in atmosphere onto polymeric substrates to achieve highly conductive Cu traces.

Typical Properties

Part number	**Cu-IJ70**
Particle Size	**10-200 nm**
Resistivity	**5-7 μΩ-cm**
Solid Content	**30-50 wt%***
Viscosity	**10-20 cP****
Surface Tension	**20-30 mN/m**
Solvent	**Organic**

* Available from 30-50 wt%
**Measured at 10rpm and 25C with Brookfield LV-I+ viscometer

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Application Notes:
Cu-IJ70 Copper Nanoink

Description

ANI's Cu-IJ70 is a copper nanoparticle ink suitable for printing highly conductive lines and patterns for applications in the printable electronics and PCB industry. Cu-IJ70 can be printed and sintered to form conductive patterns on flexible substrate materials such as polyimide, liquid crystal polymer (LCP), and certain coated papers.

Storage and Shelf Life

Cu-IJ70 ink should be stored in a tightly sealed, leak-proof container at 3-10°C. Storage in freezers is not recommended. Cu-IJ70 may be stored for up to 6 months.

Safety and Handling

When working with Cu-IJ70 ink, always use adequate ventilation and wear appropriate protective gear. Cu-IJ70 can cause eye and skin irritation. The following precautions should be taken when handling Cu-IJ70 ink:

- Read the Material Safety Data Sheet (MSDS)
- Avoid prolonged breathing of vapor
- Use appropriate safety equipment such as gloves and eye protection
- Wash hands thoroughly after handling
- Keep the ink container closed when not in use to prevent drying and spilling

Processing Procedures

Pre-processing

- The Cu-IJ70 requires ultrasonic agitation for 10 minutes.
- After sonication, the ink should be filtered using a 1 micrometer pore size glass fiber filter (PALL Acrodisc® 25mm 4523-T recommended).

Printing

- Printing has been demonstrated using inkjet, aerosolized jet, and wire rod drawdown. Conditions will vary based on technique and substrate.

Drying

- Printed ink can be dried at 100ºC for 30 minutes in ambient atmosphere.

Sintering

- Cu-IJ70 ink <5µm thickness printed onto flexible substrate materials can be photosintered using a xenon arc-discharge lamp system (Xenon 2000). The sintering parameters are 2msec single-pulse 2.6kV, and the distance from lamp to sample is 2.5cm.
  Conditions will vary based on substrate.

Clean-up

- Follow appropriate cleaning procedures for equipment used to print Cu-IJ70 ink. Excess ink can be removed with acetone or IPA.

Photonic Sintering - Conductive Copper Ink

Putting you in Charge

XENON's high energy S-2100 Pulsed Light system has been proven to rapidly sinter ***Applied Nanotech, Inc.*** copper nanoparticle ink for applications in the printable electronics and PCB applications.

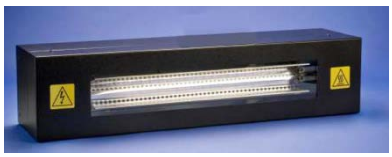
Key Specifications – Model S-2100

- Max radiant pulse energy 11 J/cm^2 at wavelengths of 190 nm to 1100 nm
- Delivers high average pulse power up to 3.7 kW/cm^2
- Ease of programming pulse energy, duration and sequencing using operator controller mounted in the systems electronics rack.
- Programmable pulse duration from 100 to 3000 μs
- Programmable pulse energy from 100 to 3,000 Joules
- Detached robust, air cooled lamp housings containing lamp, reflector and air filters.
- Storage and recall of all pulse settings with timing enables quick return to pulse recipes developed by operator.

XENON's S-2100 Pulsed Light sintering system provides the researcher the flexibility to easily program energy delivered to a target. Selecting from available lamp housings, such as the linear lamp model LH-840, (top photo below) or the spiral lamp model LH-910, (bottom photo below) provide unique exposure areas and energy profiles.

Enabling your success in printed electronics

The S-2100 is designed to support both research and low volume manufacturing for sintering of silver nanoparticle inks on low temperature substrates such as PET. This system is offered with a range of options which allow you to tailor the system to your specific sintering application.



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