Gwent Electronic Materials Ltd

Company Presentation for Multilayered PZT Products
Company History

- Formed in 1988
- Manufacture of passive electronic materials
- Contract Research
- Toll Manufacture
- Biosensor materials developed 1994
- AET acquired in 2001
Products and Services

- Experience in the development and production of electroceramic materials for the electronics industry
- Supply biosensors for medical, environmental and agri-food market sectors
- Contract research on ink formulations
Major Application Methods

- Screen Printable
- Ink Jet
- Spraying
- Dipping
- Brushing
- Syringe
Major Systems

- Particulate
- Organo Organo-Metallic
- Precious Metal
- Base Metal
- Ceramic
- Carbon
- Polymer
- Dielectrics
Markets

- Electroceramics
- Passive components
- Medical diagnostic sensors
- Electroluminescent Displays
- Electrochemical sensors
- Biosensors for environmental and food testing
Major product categories

- Multilayer / single layer systems including PZT using Platinum and Silver Palladium inks.
- Materials for gas, ceramic and other sensors
- Electrochemical sensor materials, working electrodes, reference electrodes, dielectrics and adhesives.
- Varistor PTC and NTC electrode materials for Zinc Oxide and Barium Titanates and other ceramic materials
PZT

• GEM has work for the last 10 years with large multinational companies and universities throughout Europe in the development of a wide range of electrode inks and pastes for multilayer PZT.

• We can offer Ag/Pd systems from 70/30 through to 97/3 and pure Platinum systems.
PZT

- The electrode inks have custom modified binder systems designed for compatibility with different tapes i.e. PVB, Solufil, etc.
- Range of solids from 40% to 75%
- Can be supplied as pure metal or with additions of customers own PZT ceramic to enhance processing conditions
PZT

- Tight control of metal particle size range to prevent delaminations

- GEM has the ability to modify inks by the controlled use of additives to enhance interlayer adhesion and sintering properties

- GEM has carried out extensive Research & Development into base metal electrode and termination systems
Data Sheets

• Below is a selection of PZT Electrode Data Sheets
  • C2020516D1 - Ag/Pd 70/30 - 50% solids - PVB
  • C2021031D1 - Ag/Pd 70/30 - 51% solids - PVB
  • C2021031D2 - Ag/Pd 85/15 - 70% solids - PVB
  • C2021031D3 - Ag/Pd 90/10 - 70% solids – PVB
  • C60903D5 - Pure Pt - 61% - PVB
  • C2020411D1 - Ag/Pd 70/30 - 55% solids – Solufil
  • Many other formulations available at GEM
Contract Research Services

- Short 20 day feasibility studies
- One to three month intermediate development
- Long term rolling contract research
Situated in South Wales

Half hour from Severn Bridge

Within easy access of major motorways and airports

12000 sq meters of factory space
Quality Standards

ISO 13485
SGS

ISO TS 16949
SGS

ISO 9001:2000
SGS

UKAS QUALITY MANAGEMENT 005
Dispersion Systems

• Torus Mill
• 3 Roll Mill
• Bead Mill
Torus Mill Pilot Plant

- 7L and 15L capacity chambers for research & development prior to scale up

Computer controlled dispersion
Torus Mill Production

- Large scale 250Kg Batches
- Computer controlled dispersion
3-Roll Milling Research
3-Roll Milling Production
Bead Milling Research
Bead Milling Production
Screen Printing Capability

• Research and Development Scale Dek1202
• Scale-up Dek245
• Class 100 print room
• Prototype Production Dek248
• Optical Alignment system Dek260
• Capability of 1 million + electrodes per year
Dek248 production printer
Dek260 with optical alignment
Haake viscometer
High temperature 6 zone belt furnace
Conclusions

• GEM can provide a range of electrode materials for PZT Multilayer and Stack Systems
• GEM can provide full technical support for all our ink and paste systems
• GEM can be your partner in the development of new PZT components, with the provision of unique tailor-made formulations
• Contact GEM for further information: information:-
Gwent Group

- Monmouth House
- Mamhilad Park
- Pontypool
- Torfaen
- NP4 0HZ
- United Kingdom
- Tel: 00 44 (0) 1495 750505
- Fax: 00 44 (0) 1495 752121
- Email: sales@gwent.org
- Website: http://www.gwent.org