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Advancing the Arizona State University Knowledge Enterprise

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Electroactive Poly(amidoamine) Organic Polymers (EPOP)

The market for point of care test strips demands high quality tests and low production costs without sacrificing sensitivity and specificity. Highly-ordered nanomaterials are being investigated as a viable approach for meeting these demands. Highly-ordered nanomaterials are ideal as they are inexpensive to manufacture and have been shown to produce a remarkable increase in the sensitivity and specificity of electrochemical testing. Unfortunately, current fabrication techniques make it difficult to produce uniform or easily controlled nanostructures.

Researchers at Arizona State University have developed novel electroactive organic polymer compositions that can be screen printed for biosensing applications, energy storage and alternative energy sources. Alternatively, these compositions may be good candidates for electron mediators or replacements for redox probes used in blood glucose sensors. These compositions self-assemble into uniform nanostructures with remarkable electrochemical activity. Moreover, these materials are relatively low cost and yield a high quantity of product. These compositions should be amenable to mass manufacturing using known scale-up methods.

These low cost, self-assembling compositions provide unique and valuable characteristics for biosensing and energy applications.

Potential Applications

- Electrochemical detection
  - Biomarker detection
- Electron Mediators or replacements for redox probes in blood glucose sensors
- Energy applications
  - Energy storage
  - Alternative energy applications

Benefits and Advantages

- Relatively long shelf life when stored in lighted conditions
- Low manufacturing costs
- Water based chemistry
- Green chemistry manufacturing
- Able to be screen printed for higher-volume productions at further reduced cost
- High production yields
- Hydrophilic - ideal for biological samples
- The compositions should be safe for applications in vivo

For more information about the inventor(s) and their research, please see Dr. La

Belle's laboratory webpage