

NASA Langley Research Center is actively seeking partnerships and collaborations to commercialize its Polyimide technology.

## The Market Opportunities

Tough Polyimide polymers are, or may be, used in several industries, including:

- **Semiconductor Manufacture:** Adhesives for microprocessor frames; flexible cover layers for circuit boards; substrates for thin-film, multilayer flex circuits; and moisture-resistant coatings for semiconductors and remote sensors.
- **Aerospace:** Satellite mirrors, abrasion-resistant coatings and heat sinks.
- **Textiles:** Additives in cloth to improve texture, durability and wear.

## The Benefits

The benefits of these materials include:

- Tough, lightweight and durable.
- Moldable, extrudable and sprayable characteristics.
- Non-cracking.
- Resistant to solvents, and to moisture and temperature extremes.
- Easily adhere to glass, ceramics, copper, aluminum and titanium.
- High-strength, high-temperature moldable binder for ceramics and carbon.
- No water released during application or drying.
- RTM compositions available.

## The Technology

Thermoplastic copolyimides are extremely tough, yet can be readily extruded, melt-processed, compression molded or machined into parts, and blended with a wide range of materials. The copolyimides can also be used as a sprayable coating and be filled with graphite, diamond, ceramics or metals. Self-bonding properties allow the addition of fillers that increase hardness and compressive strength, lowering coefficient of thermal expansion and decreasing friction.

## Polyimide Polymers

Rugged, high-temperature parts, coatings, and films



Typically, polyimides are processed as amic acids, which release water. Because NASA Langley's polyimides are processable in imidized form, they exhibit outstanding moisture resistance and thermal stability.

Polyimide polymers are resistant to hydrocarbons, lubricants, anti-freezes, hydraulic fluids and detergents. Their ultra-low-moisture pickup permits optimum performance in wet environments where temperatures are elevated. Polyimide properties make it possible to inject or compression-mold both large and small parts, which can then be further machined or polished.

## Additional Information

To discuss in detail how this technology can profit you and your business, please contact:

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