

Polymics



High Performance Polymers
Solution Provider



The Company & Mission



Company Profile

■ Founded 1994, Application Specific Polymers

- Privately Owned
- Technology Focused
 - ~ 90 Employees (50 US, 40 Taiwan/China)
 - 1 in 4 employees hold a technical degree
 - 8 Technical degreed PhD's on staff



■ Production Facilities in US, China and Taiwan

- Headquartered in State College, PA
- Arylmax HT Material (China)
- Applied Polymer Materials (Taiwan)
- Sales office in Houston, TX

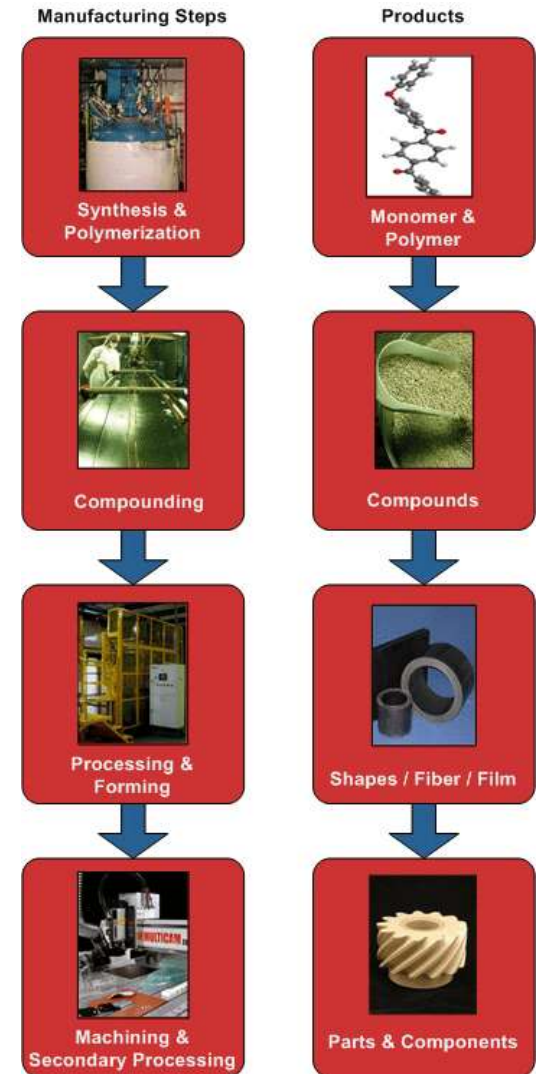


Experienced Team

- **Dr. Tim Hsu – *Founder, CEO and Chairman***
 - 25 years polymer processing and application development
 - Recognized industry expert and holder of multiple patents
- **Scott Waughtal – *VP, Commercial Operation***
 - Previously running sales for a \$100M division of a \$1B global manufacturing company
 - Unique combination of sales and manufacturing experience
 - 7 years of specific oil & gas sales expertise
- **Dr. Yi-Feng Wang – *Chief Technology Officer***
 - 22 years polymer chemistry experience
 - Holder of 15 US patents on high performance polymers
- **Jim Dunn – *CFO & GC***
 - 11 years as public company CFO and GC
 - 25 years of financial, legal and acquisition experience
- **Consultants – *Professor Allan S. Hay; Professor Ian R. Harrison; Dr. Fu Chen***

Mission

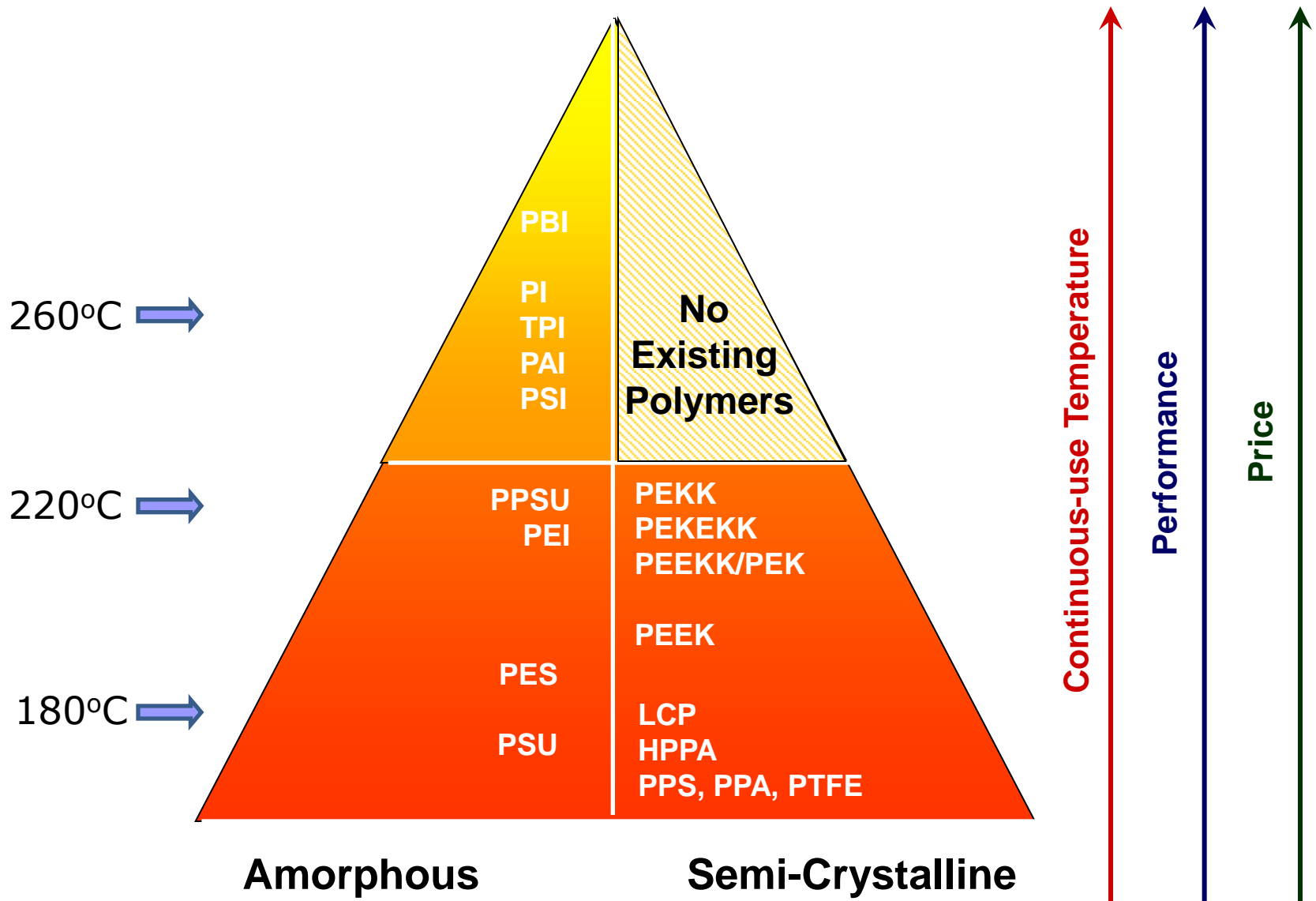
- **Premier developer and manufacturer of highly engineered plastics**
 - Used in critical industrial applications
 - “Problem to Finished Part Solutions”
- **Patented products that yields**
 - Copolymers & alloys
 - “Application specific polymers”
- **Fully integrated manufacturing capability**
 - Arylmax® polymer & custom synthesis
 - Pyramid™ compound & specialty compounding
 - Innovative conversion processes
 - Powder & coating technologies



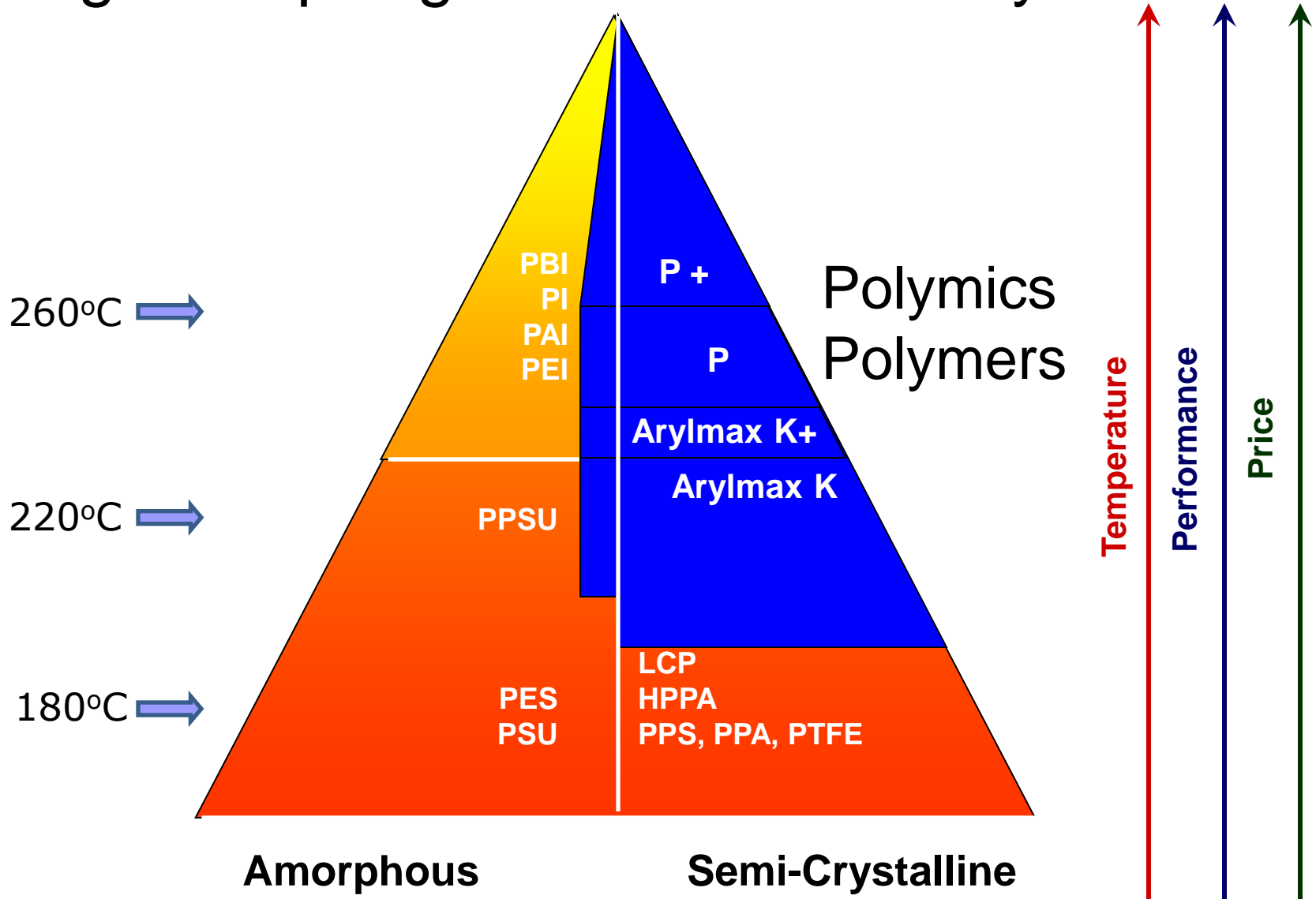
The Market & Applications



High Temp/High Performance Polymers



High Temp/High Performance Polymers

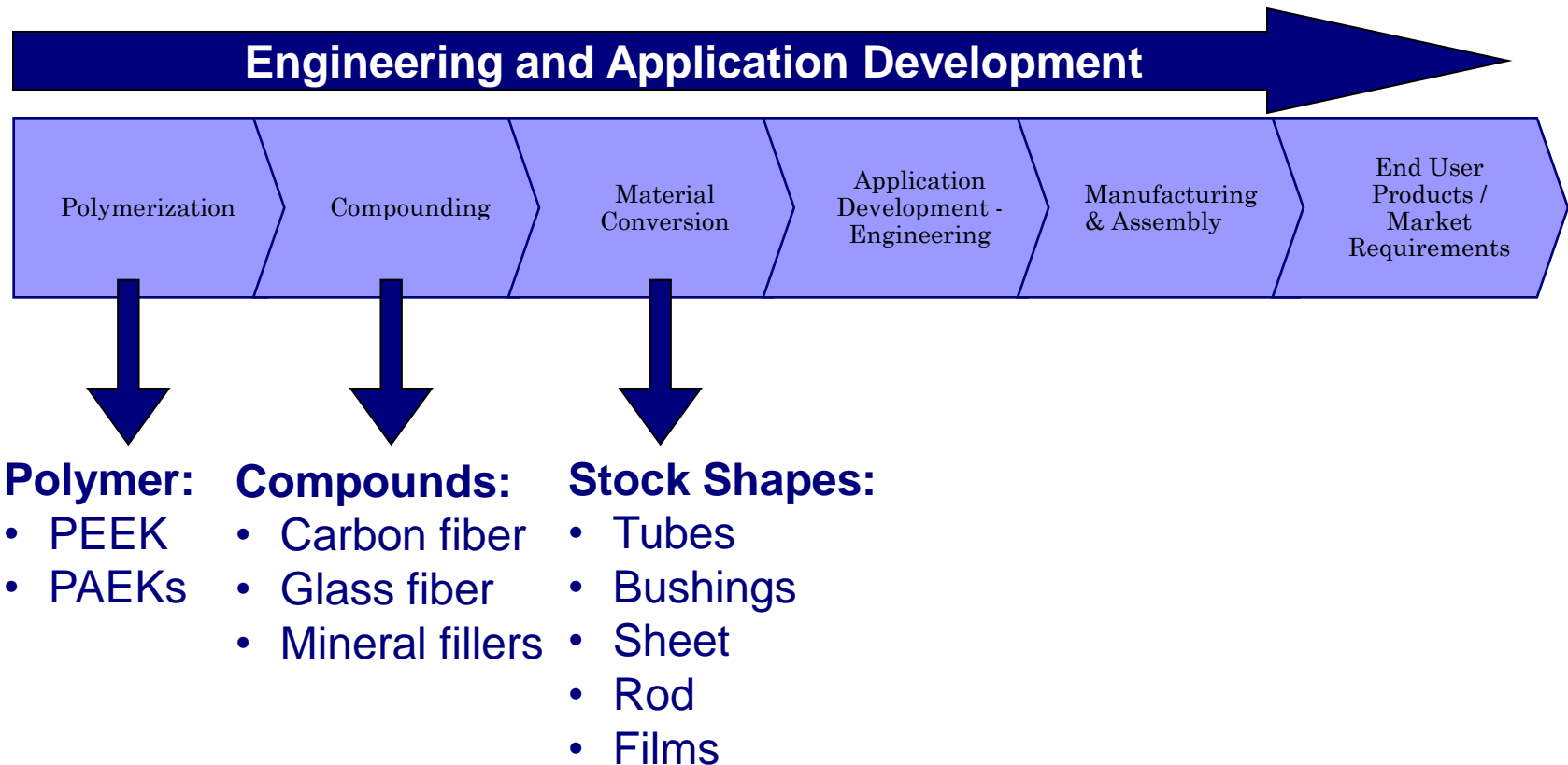


Products and Services



Polymics Products & Services

... INTEGRATED SOLUTION PROVIDER



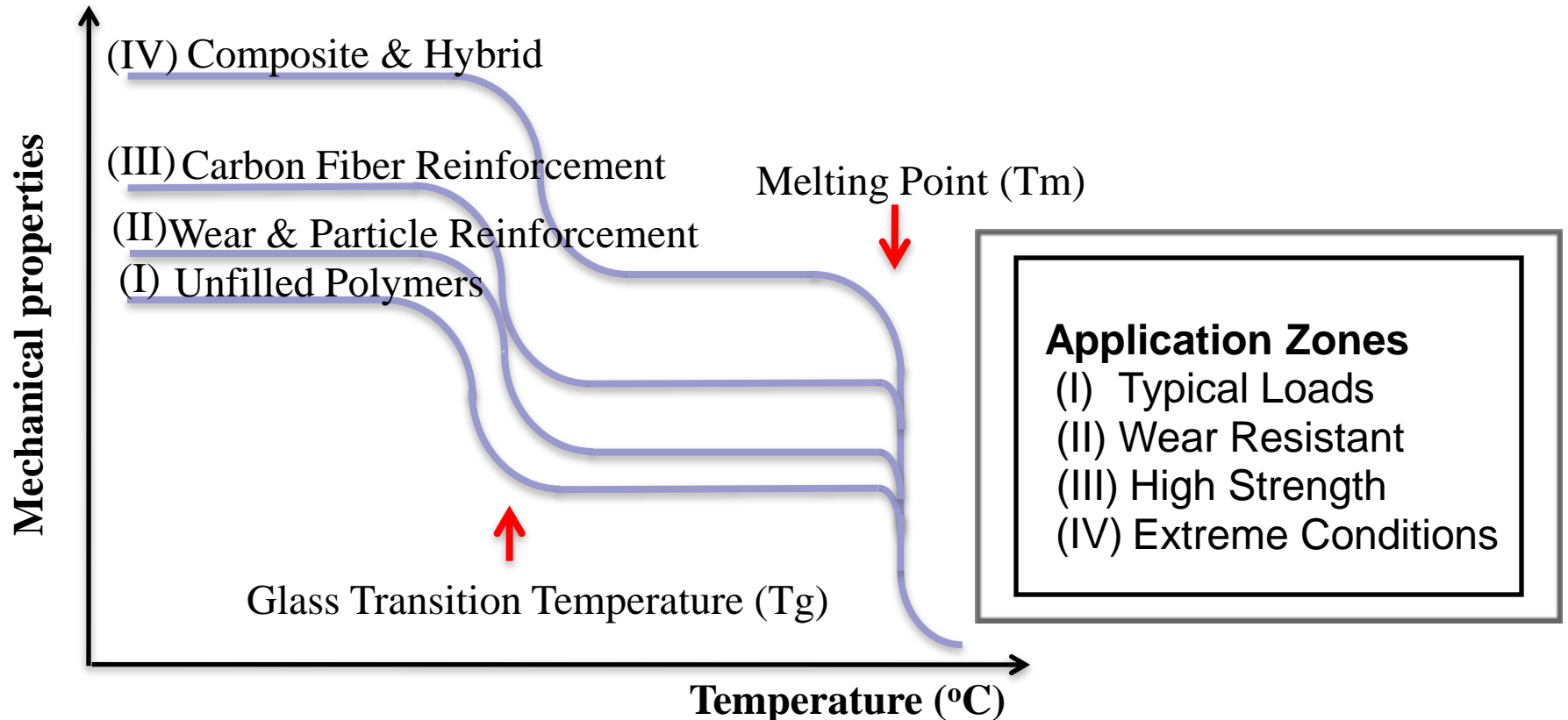
... and HIGH PERFORMANCE COMPONENTS

Stock Shapes

- ❑ Centrifugally Assisted Molding (CAM) tubes
- ❑ Injection Molded tubes
- ❑ Compression Molded tubes and plates
- ❑ Extruded sheet, film and rods



Polymics Innovation – Pyramid™ Compounds



Polymics HPP Technology – Arylmax®

■ Arylmax® K

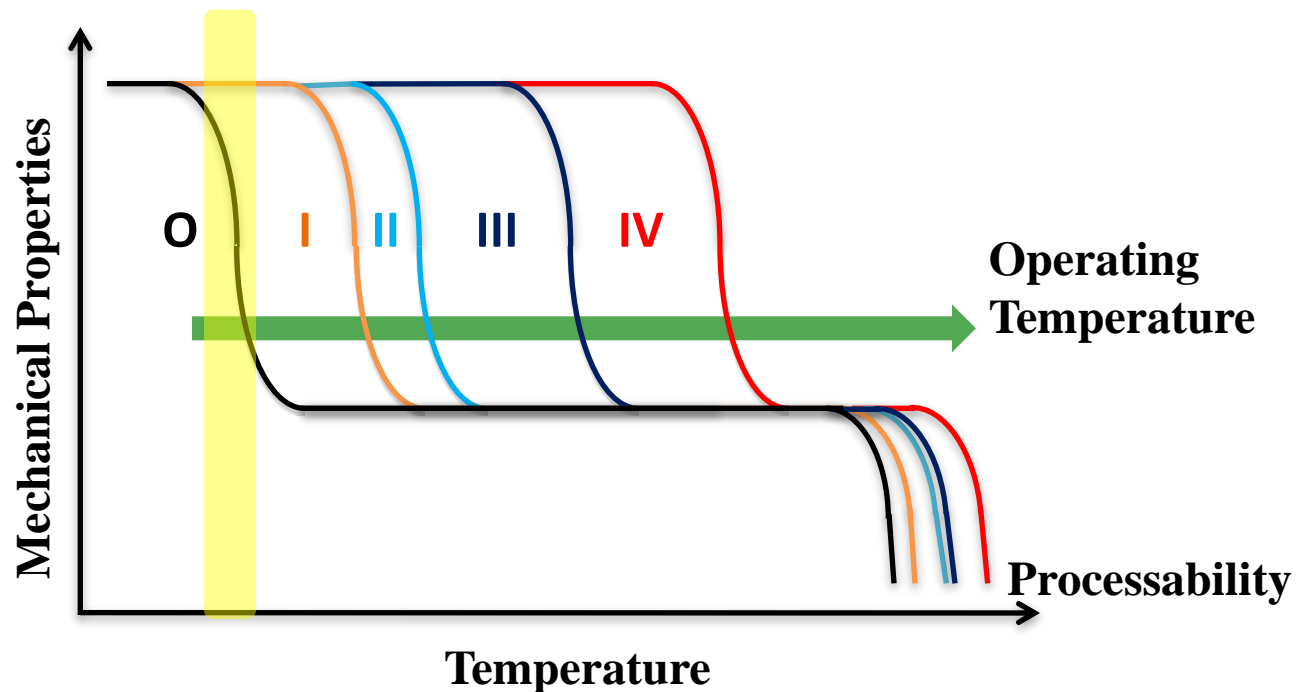
- Semi-Crystalline thermoplastic copolymer family
- Electrophilic displacement reaction @ low temp (-20 to 25 °C)
- Tg 165 to 175 °C; Tm 305 to 370 °C

■ Arylmax® P

- Semi-crystalline thermoplastic copolymer family
- Nucleophilic displacement reaction @ high temp (260 - 320 °C)
- Tg 195 – 245 °C; Tm 320 to 370 °C

Polymics Innovation - Arylmax[®] Polymers

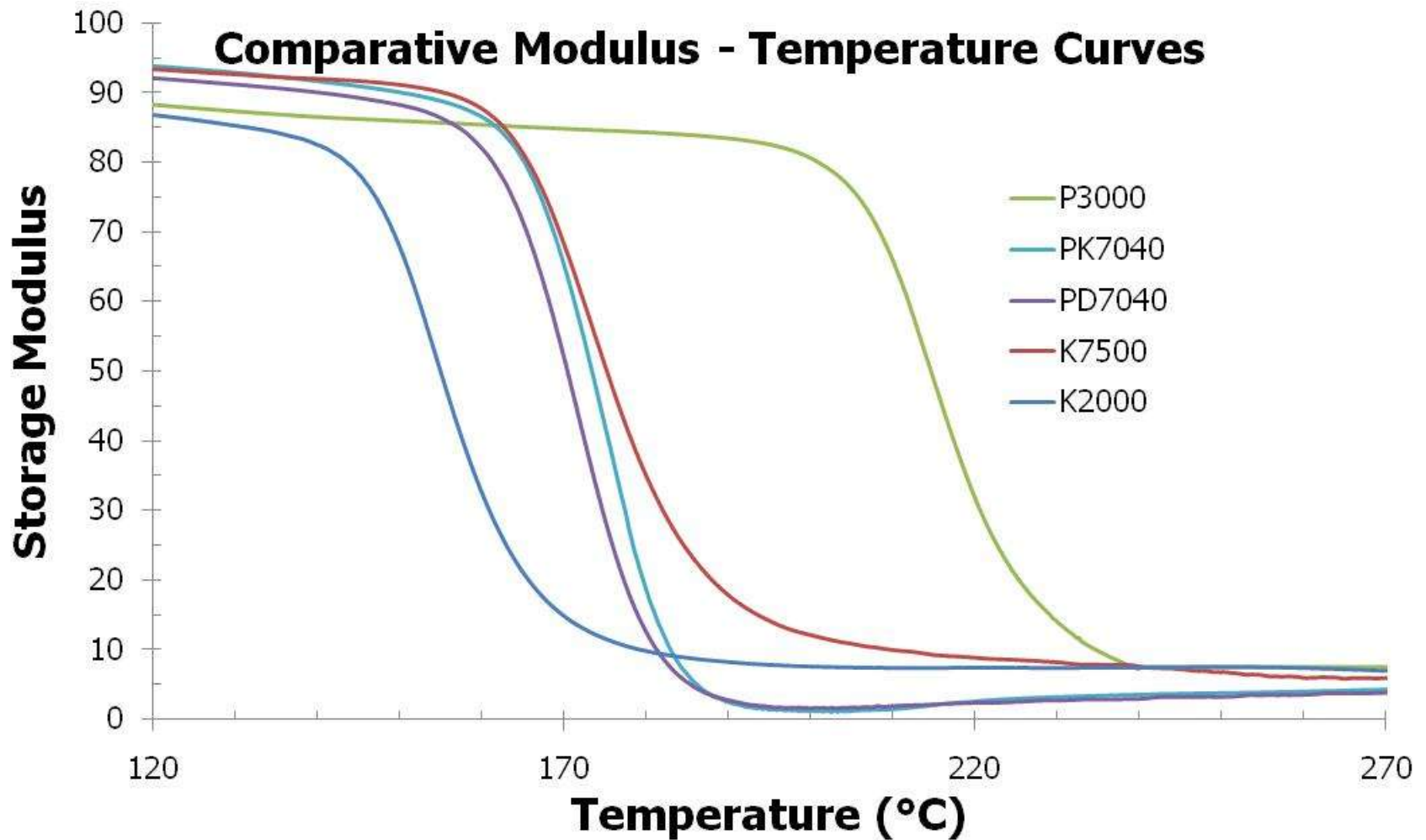
- Increases operating temperatures
- Maintains processing temperatures



Semi-Crystalline Arylmax[®] Polymers

Application Zones	Tg, °C	Tm , °C	Polymer	Status
0	145	343	PEEK	Industry Std
I	155 - 175	305 - 365	Arylmax[®]-K	Commercial
II	170 - 200	320 - 360	K-Plus	Commercial
III	190 - 250	330 - 350	Arylmax[®]-P	2011
IV	240 - 300	330 - 350	P-Plus	2011

Overlay of Storage Modulus (normalized)



Arylmax® Polymer Advantages

- The only semi-crystalline polymer with over 200 °C Tg
 - Potential to meet increasingly critical industrial high temp spec
 - A family of polymers with both high temp capability & superior chemical resistance
 - Forms alloy with most commercial high temperature plastics

SUMMARY & DISCUSSION

- **Polyketones, Polysulfones & Polyimides** are the main HPP families
- **HPP parts** provide lighter, stronger, more wear & chemical resistance at Higher Temperatures (150 °C to above 300 °C).
- **Arylmax®** polymer extends HPP application limit by improving thermal-mechanical transitions (High-Tg polymers)
- **Pyramid™** compound extends HPP static & dynamic mechanical performance with reinforcement or other modifiers
- **HPP** requires vertically-integrated supply chain with strong application focus
- **Polymics** is the premier supplier of HPP & it's derivative products

