

Role of Regional Academic Institutions in Flexible Electronics Development in Ohio

Miko Cakmak

College of Polymer Science and Polymer Engineering
The University of Akron

cakmak@uakron.edu

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FLEXIBLE ELECTRONICS

Flexible displays



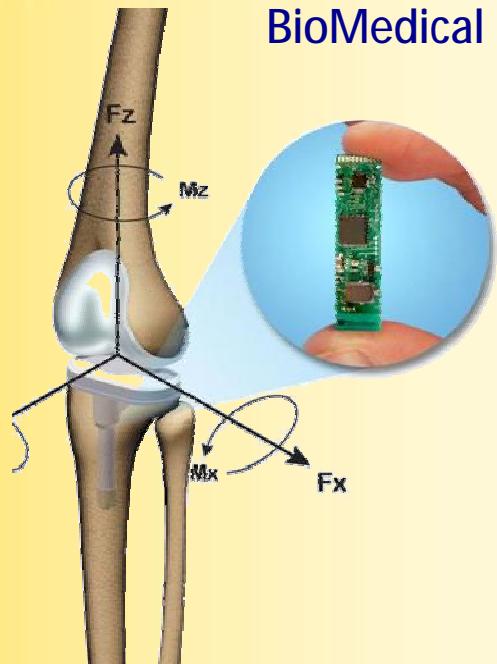
Soft Sensors



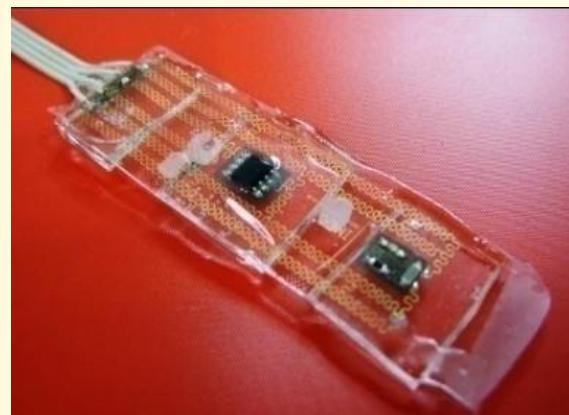
Printed Circuits



BioMedical Devices



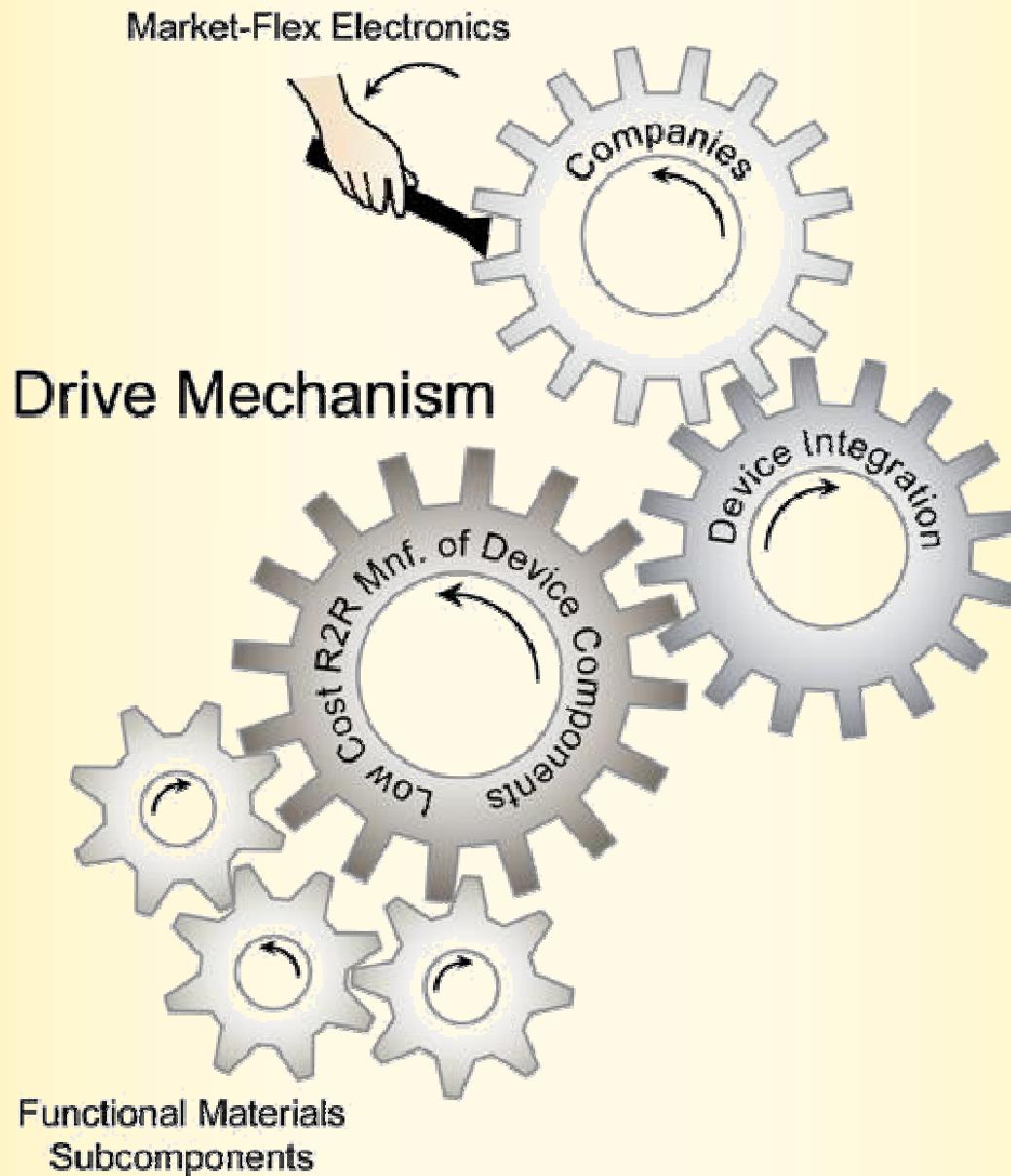
Stretchable electronic Implants



RFIDs



PATH TO COMMERCIALIZATION WITH POLYMER BASED FLEXIBLE ELECTRONICS



NEEDS

1. Materials

- Multifunctional low cost polymer films (Flexible, transparent, conductive, reflective)
- Functional small molecules (Liquid crystalline ,conductive, Semiconductive, magnetic , piezoelectric)
- Photo functional materials for processing with light

2. Rapid Manufacturing Processes

- Roll- to roll
- Shaping- Thermoforming, Precision Molding, Printing
- Assembly processes- Lamination, Singulation ,Interconnects

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3. Work Force Development Curriculum



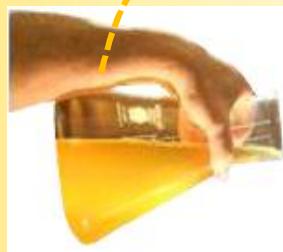
Monomers/Polymers

Functional Molecules
Nanoparticles

Liquid Crystals

Photochemicals

CHEMISTRY

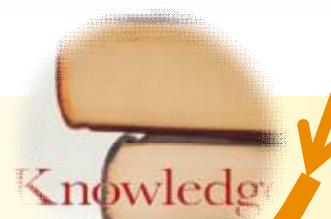


ENGINEERING & R2R MANUFACTURING



IN

OUTREACH-EDUCATION



OUT

**Akron Polymer Training Center
Global Polymer Academy**



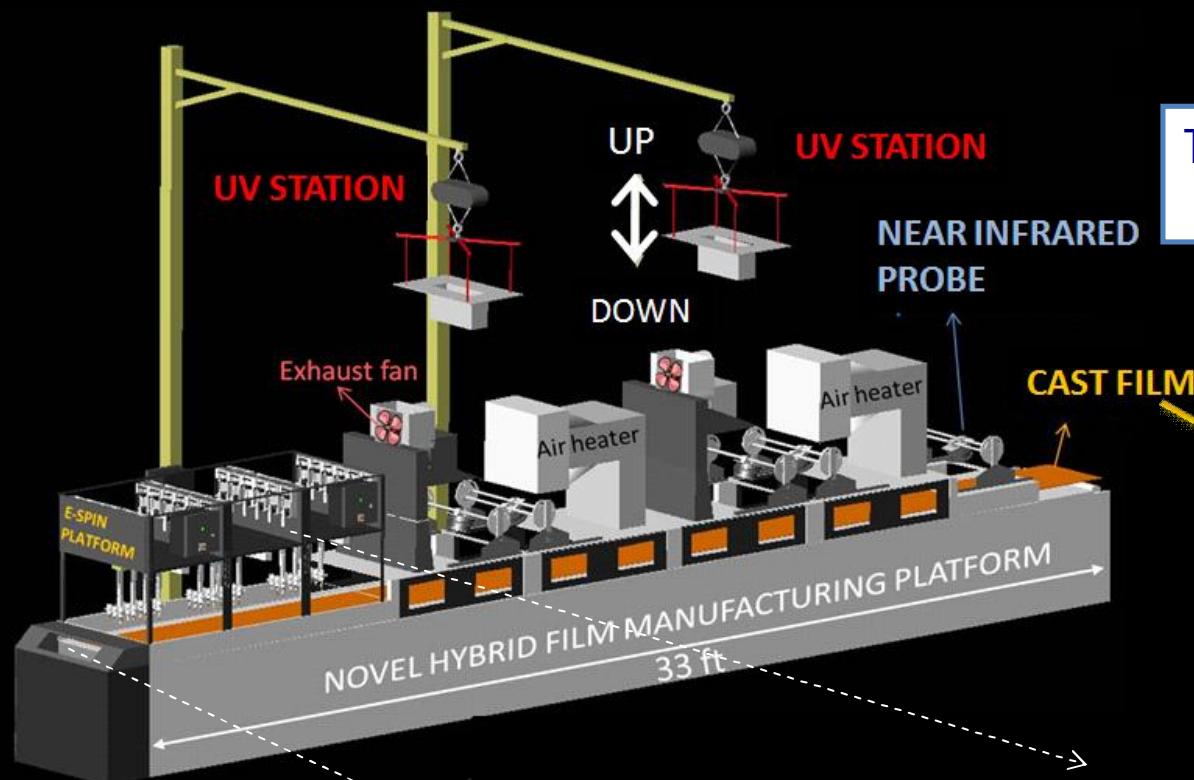
**DEVICE INTEGRATION (APS, KDI,
Alphamicron, Orbital Research...)**



RECENT INVESTMENTS IN FLEXIBLE ELECTRONICS AT UNIVERSITY OF AKRON CAMPUS NATIONAL POLYMER INNOVATION CENTER

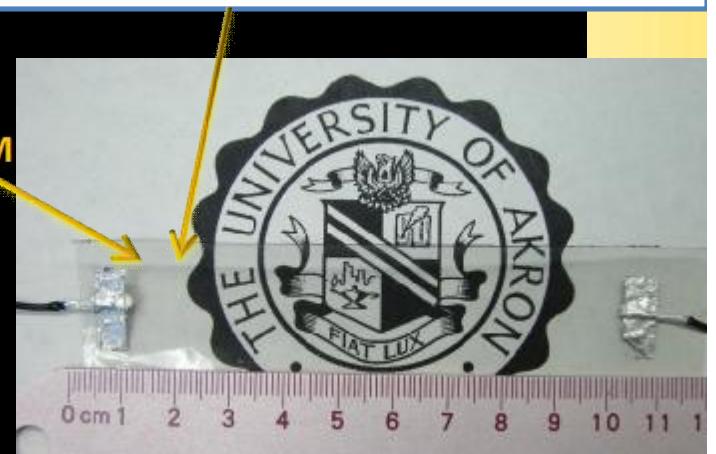


HYBRID FUNCTIONAL FILM PROCESSING LINE

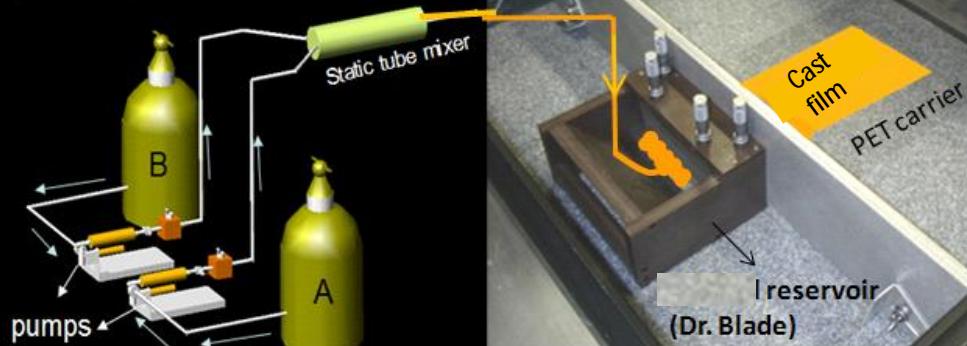


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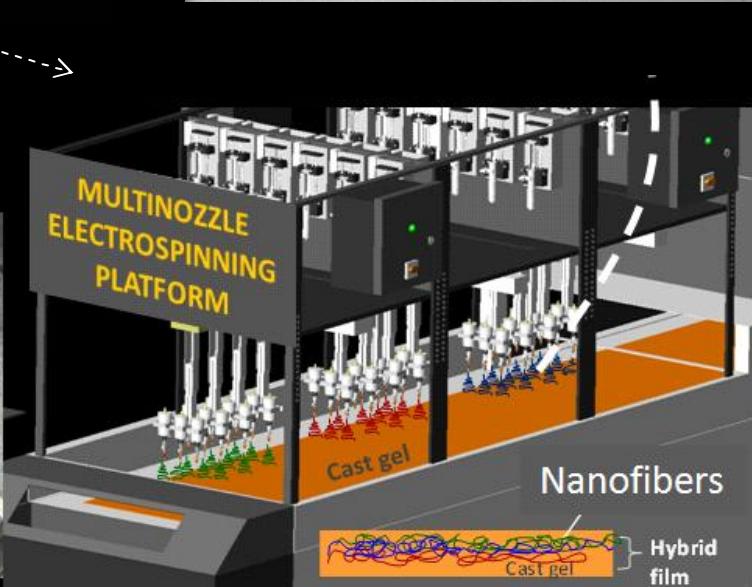
TRANSPARENT CONDUCTIVE FILMS
With Nanowires



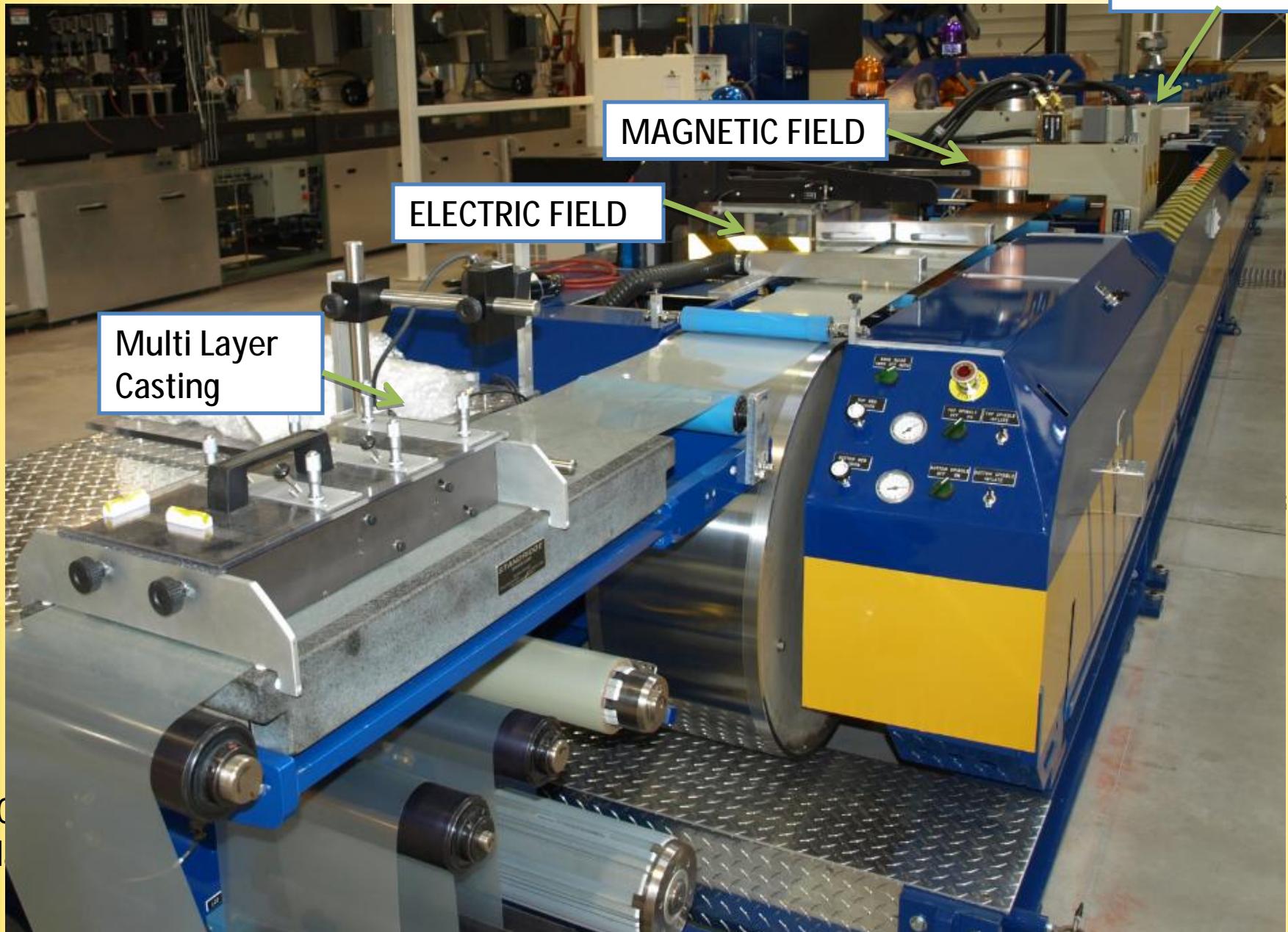
SOLUTION DELIVERY
STATION



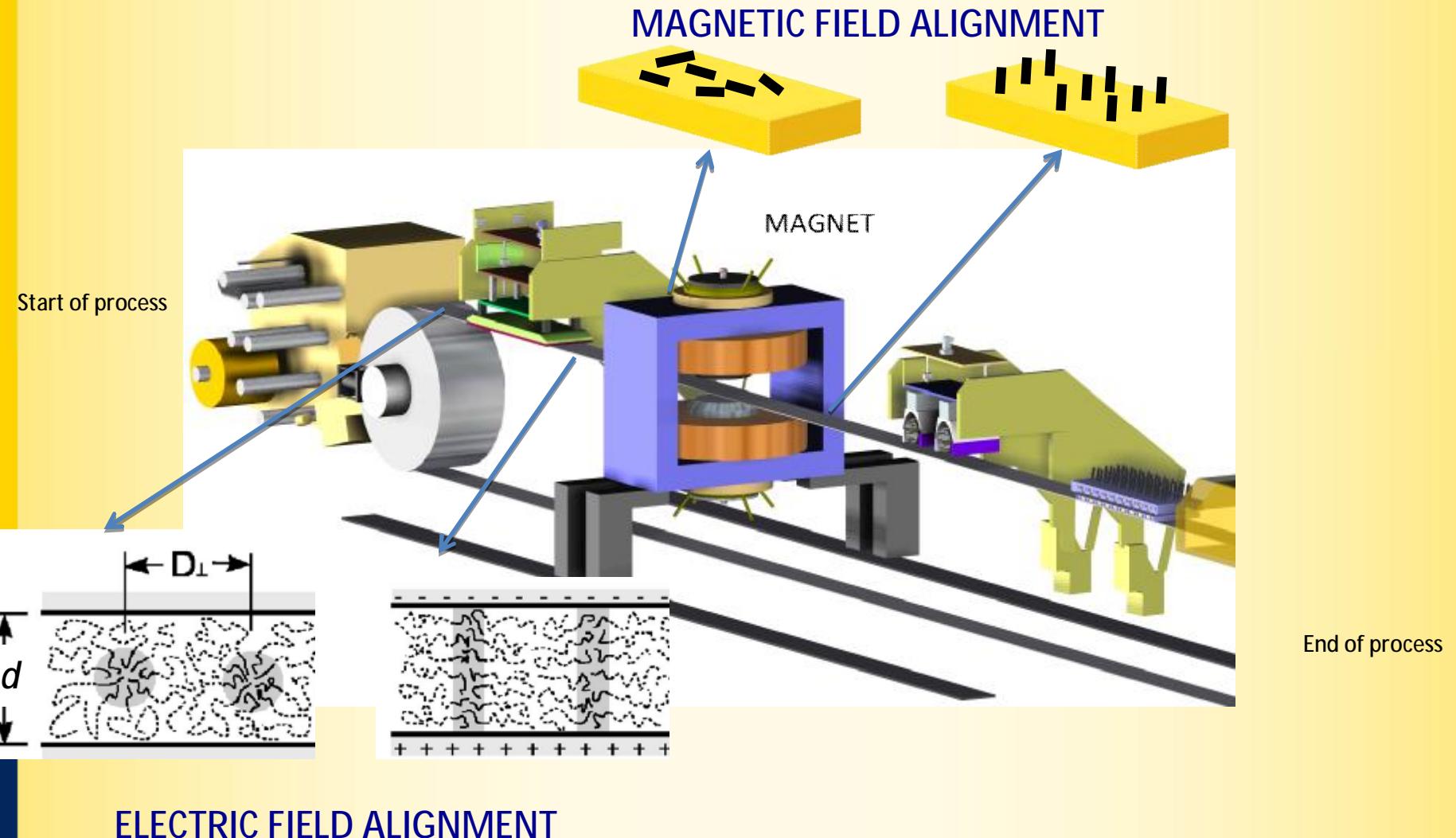
DOCTOR BLADE
ON HIGH PRECISION GRANITE



ELECTROMAGNETIC PROCESSING LINE



Z- Orientation via Electric and Magnetic Fields



Continuing Role of Regional Academic Institutions

- Work force development
Technician, BS, MS, PhD level scientist and engineers
- Identify and eliminate scientific and technological barriers to commercialization (Fundamentals of Materials , Processes, Modeling)
- Coordinate with partner industry and academic institutions

