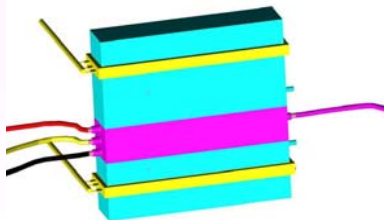


# Current Apheresis Centrifuge Instruments



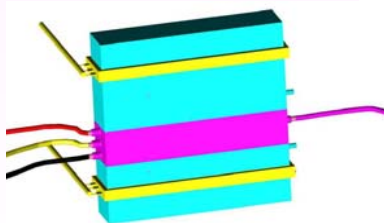
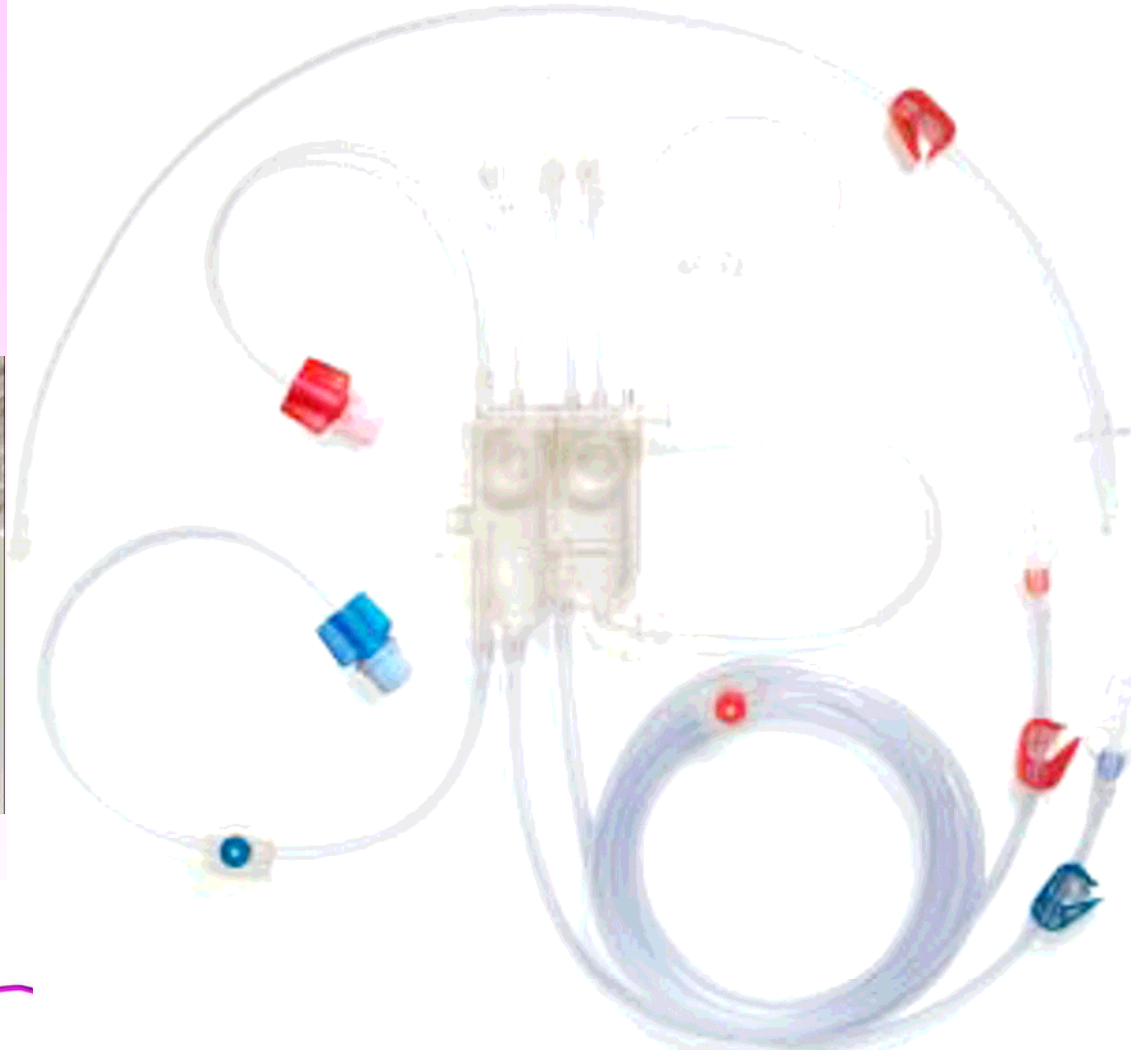
These units collect blood from a blood donor and separates it into blood cells and plasma. They use disposable centrifuges for separation. Typical Dimensions: 17 inches, 29 inches, 53 inches, 250 pounds, price \$32,000



Acoustic Separator - Pat Pend-  
intellicaster@hotmail.com

# Current Blood Sets – Disposable and Sterile

Typical Price  
\$1,100 (with  
Centrifuge  
Bowl)



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intellicaster@hotmail.com

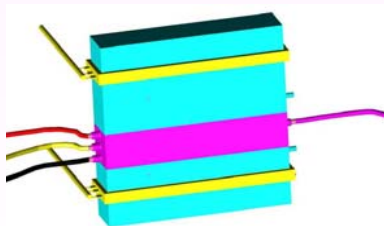
# Theory of Acoustic Separation

If an Acoustic Standing Wave Is Imposed Within a Vessel, Every Particle Type Within Will Attempt to Migrate Away From High Energy Antinodes.

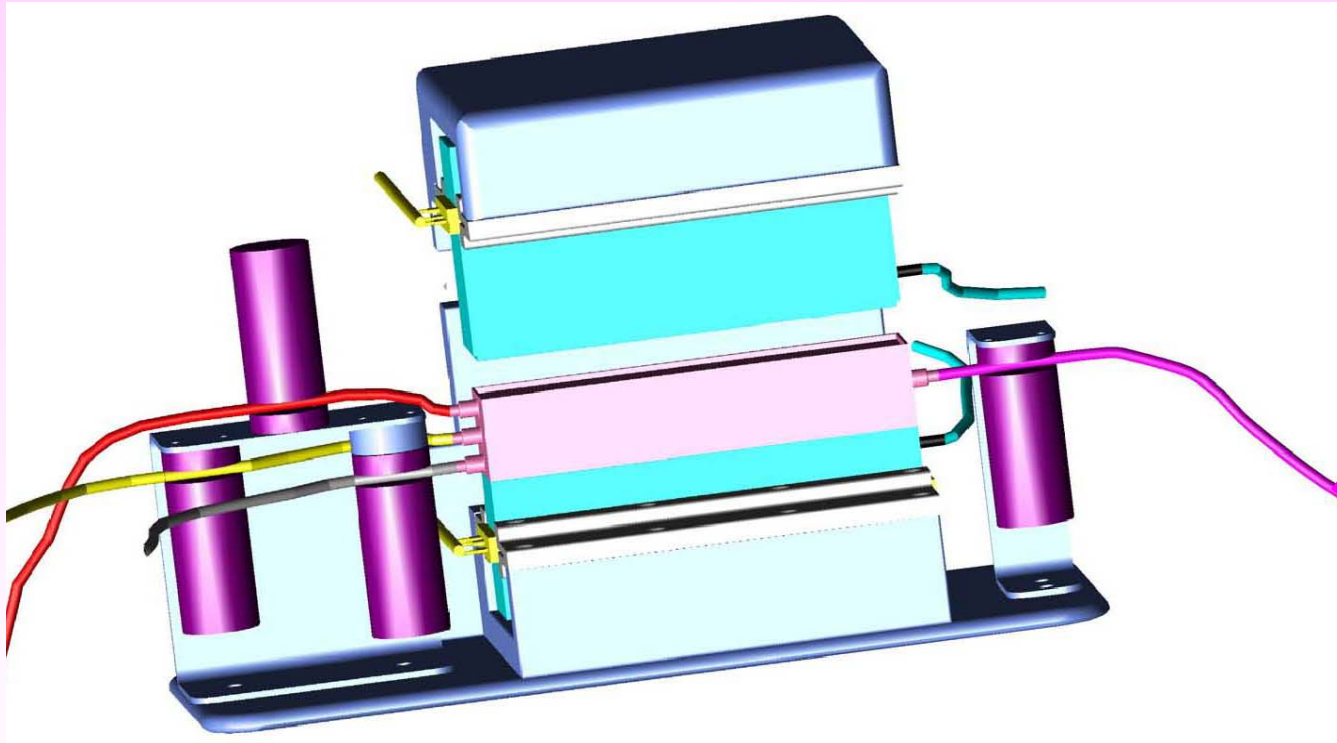
Each Particle Type Has a Unique Acoustic Migration Property – Stronger / Weaker.

The Strongest Property Particles Will “Win” Node Locations – the Weakest Will “Lose” & Be Forced to Anti-node Locations by Stronger Particles.

**Particle Type Separation Occurs!**

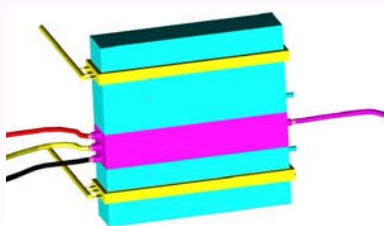
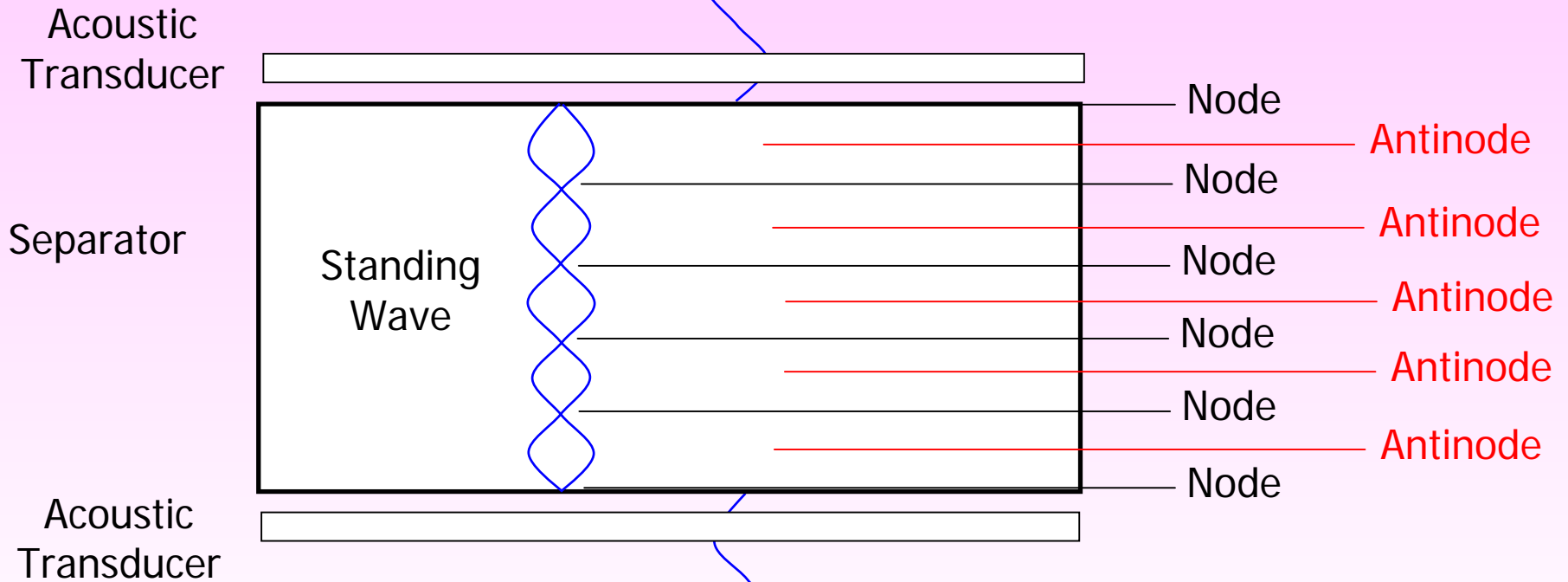


# State of the Art - Acoustic Apheresis Instrument



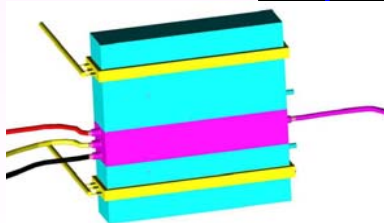
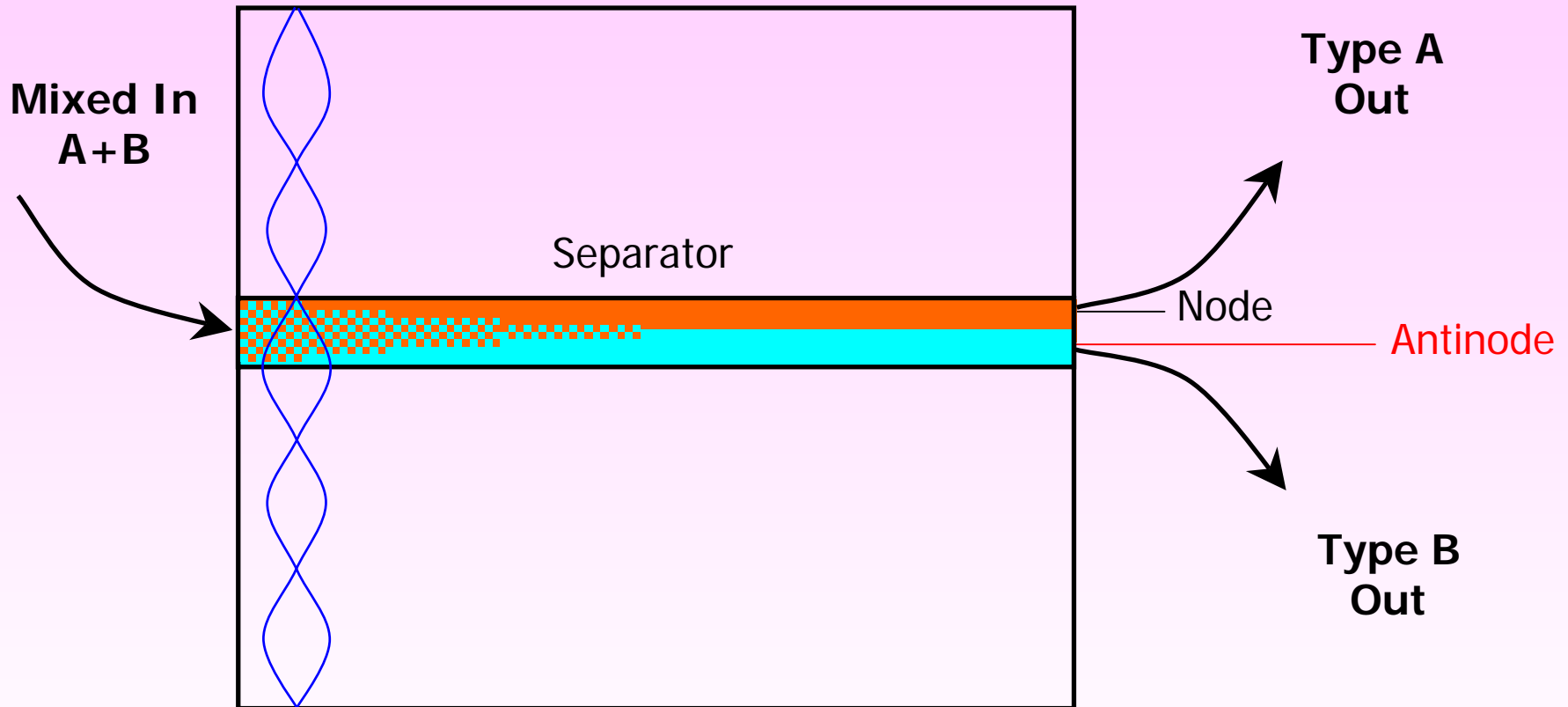
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intellicaster@hotmail.com

# Standing Wave – Resonant System



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# Particle – 1/4 Standing Wave Layering (Dynamic)

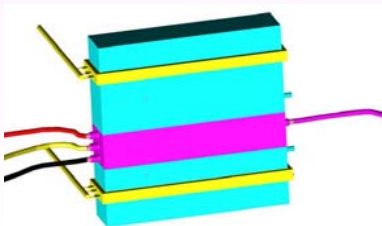


# Prior Art Limitations

**Micro Separators** - Too Small for Apheresis – Clog Prone – No Purity Valve Controls

**Macro Separators** – Not one Has  $\frac{1}{4}$  Wave Separator – No Purity Valve Controls – Slow, Impure Layer Migration Collection Process

Summary – No Existing / Disclosed or Patented Separator Is Practical for Apheresis!



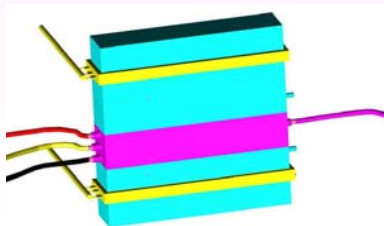
# Generic Patent Claims

No Patent Prior Art Macro Acoustic Separator Used a  $\frac{1}{4}$  Wave Separator.

No Patent Prior Art Separator Integrated Purity Control Valves.

No Prior Art Separator Integrated the Separation Chamber With a One Piece Kit (Disposable, Sterile)

**Summary: Strong Generic Intellectual Property Protection!**



# Invention Embodiment Objectives

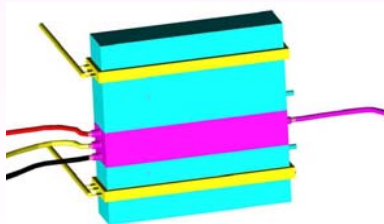
To Facilitate Collection, Create Thickest Separation Layers Possible - Use  $\frac{1}{4}$  Wave.

Optimize Collection Purity - Use Macro Size Separator - Include Purity Valves.

Incorporate Optical Sensing Pairs Near Collection Exit Ports to Control Valves.

Adapt Separator to Low Cost Disposable / Sterile Kits Preferred by the Medical Industry.

**Invention: Acoustic Separator Practical for Apheresis!**

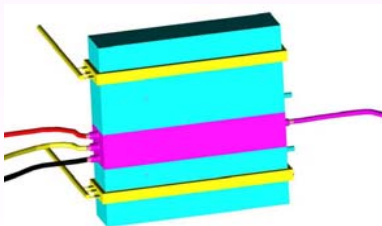


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intellicaster@hotmail.com

# Separation Chamber

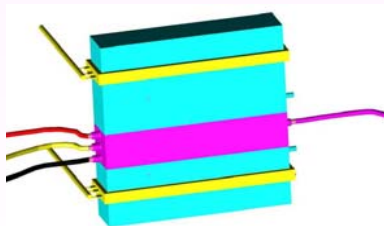
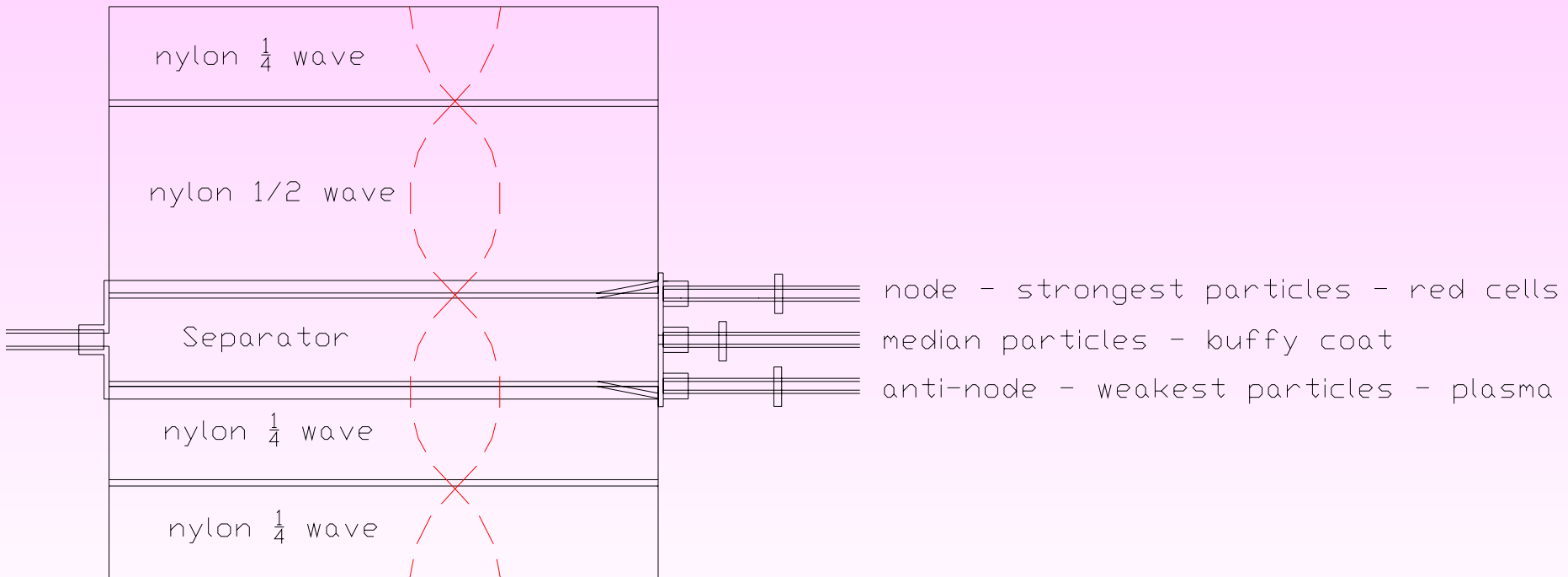


Low Cost Separation Component of a Disposable Blood Set – One Tenth the Cost of a Centrifuge Bowl



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intellicaster@hotmail.com

# 1 1/2 Standing Wave Resonator 1/4 Wave Separator



Acoustic Separator - Pat Pend-  
intellicaster@hotmail.com

# Advantages Acoustic System Over Centrifuge System

Less Stress on Cells (Haemolysis)

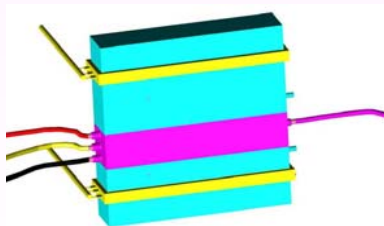
Less Extra Corporeal Blood Volume

Faster Apheresis

Lower Disposable Tubing Set Costs \$1,100 to \$400

Lower Instrument Cost \$32k to \$9K

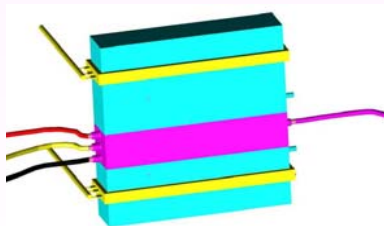
Smaller Instrument Size 250 Pounds to 40 Pounds



# More Advantages Acoustic System Over Centrifuge System

Extra Corporal Fluid (Plasma & Red) Return to Patient Quicker (Reducing Chances for Patient Shock and Minimizing Need to Add Additional Saline to Patient to Replace Extra Corporal Fluids)

More World Population Can Receive Treatment Resultant From Lower Instrument and Disposable Costs

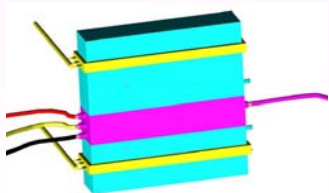


# Size of Apheresis Industry

Annual World Sales \$910M

(90% Sales Revenue From Blood Set Kits,  
10% Sales Revenue From Instruments)

(60% of Sales in Foreign Countries)



# Revenue From Acoustic Systems Replacing Centrifuge Systems

12 Months to Complete Pilot Production

12 Months for Clinicals, FDA Approval, Fabricate  
Production Equipment / Tools

Third Year Market Penetration Begins at 10%

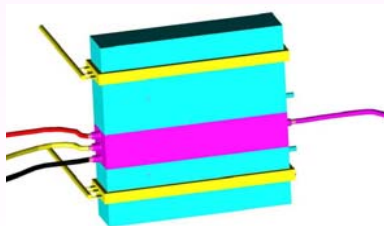
Annual Sales:

Year 3 \$92m

Year 4 \$182M

Year 5 \$273M

Year 6 \$364M



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# **The Acoustic Separator Has Incredible Potential**

**Patent Protection, Prototype, and Production Drawings Completed**

**Sponsor Sought to Obtain FDA Approval, Produce and Market!**

**The World Awaits!**

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intellicaster@hotmail.com

