

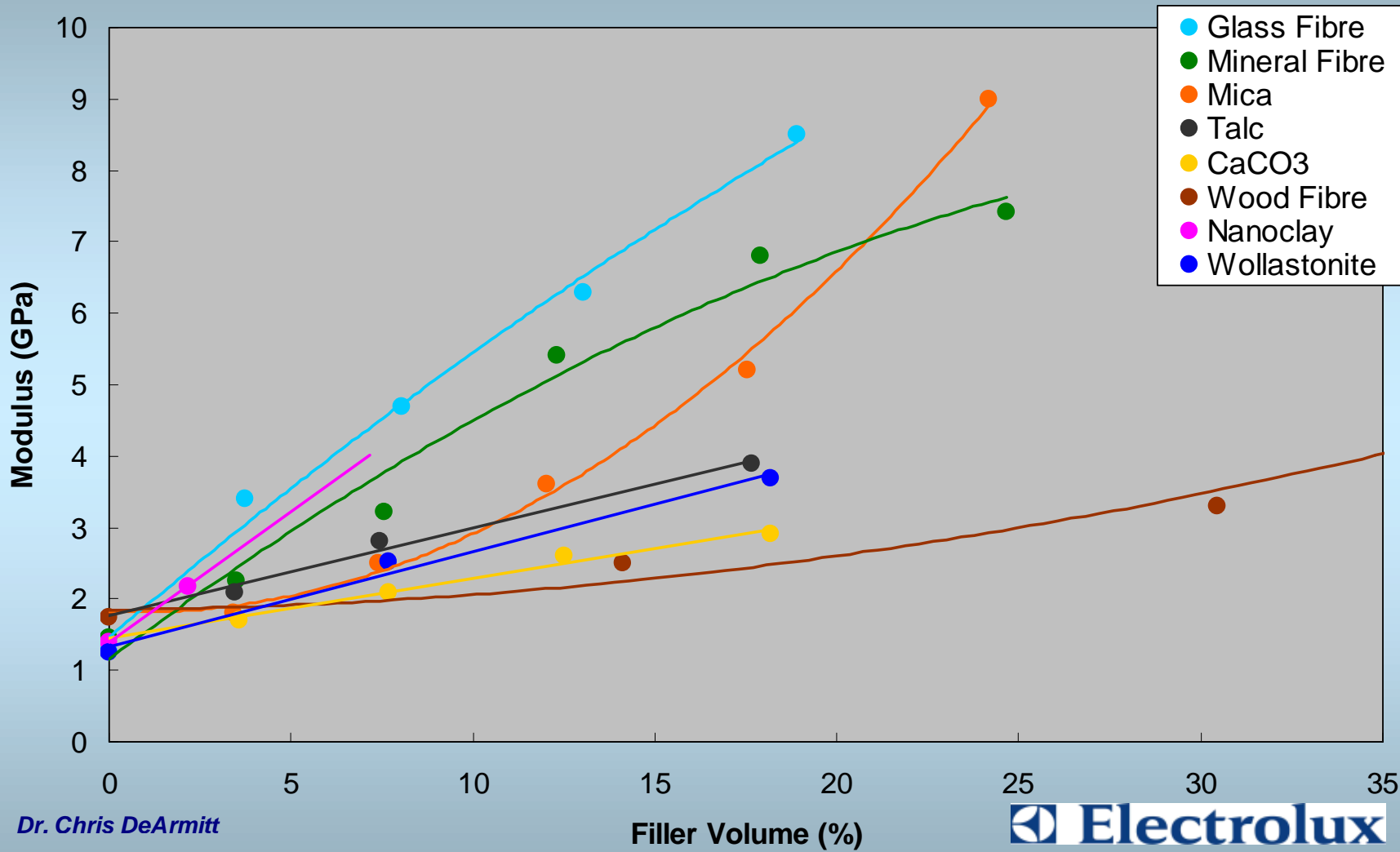
Nano-Composites versus Traditional Mineral Filled Thermoplastic

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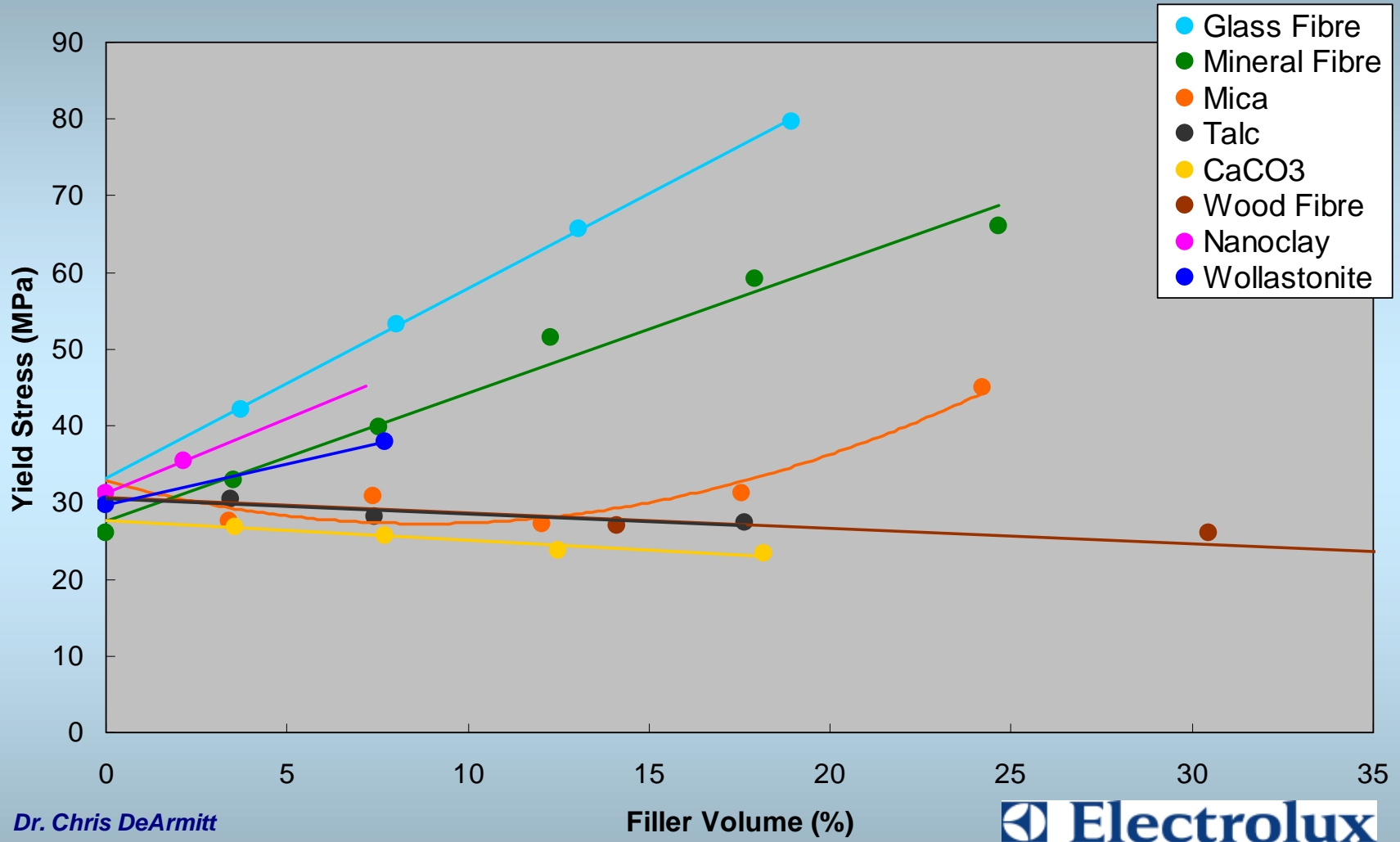
Outline

- What are nano-composites?
- What makes them special?
- How do they compare to traditional composites?
- Are they cost competitive?
- Conclusion and future outlook



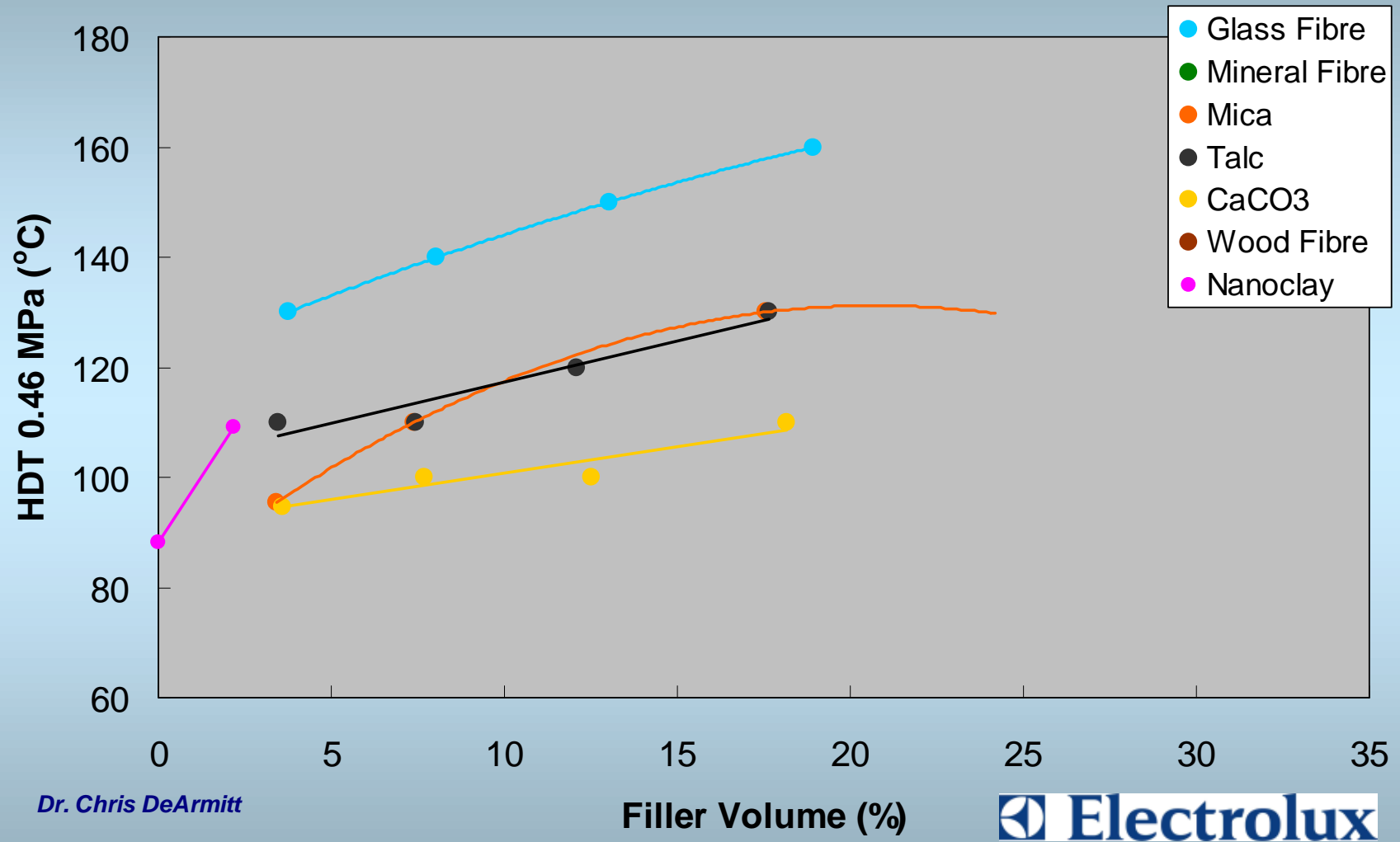
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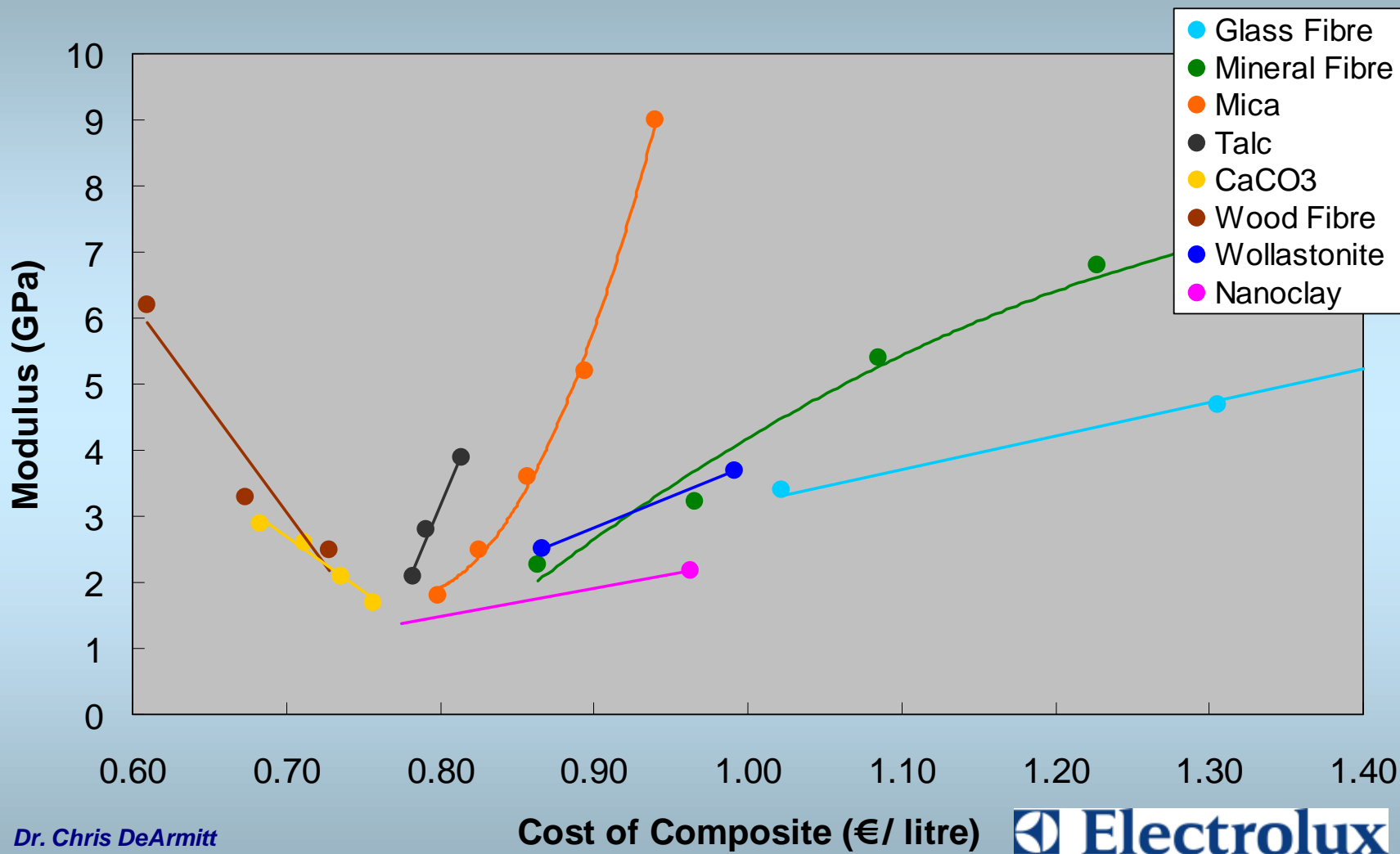
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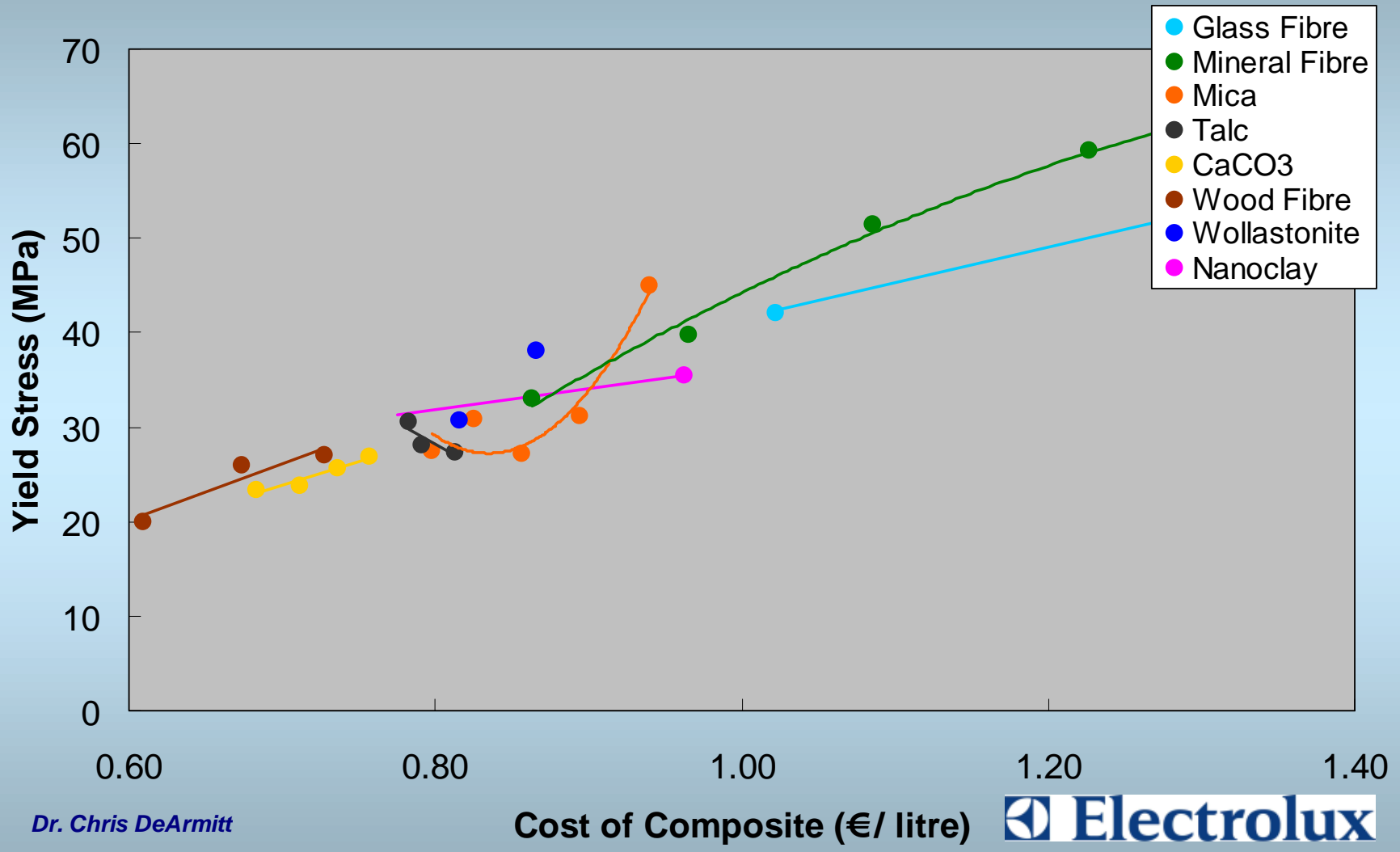
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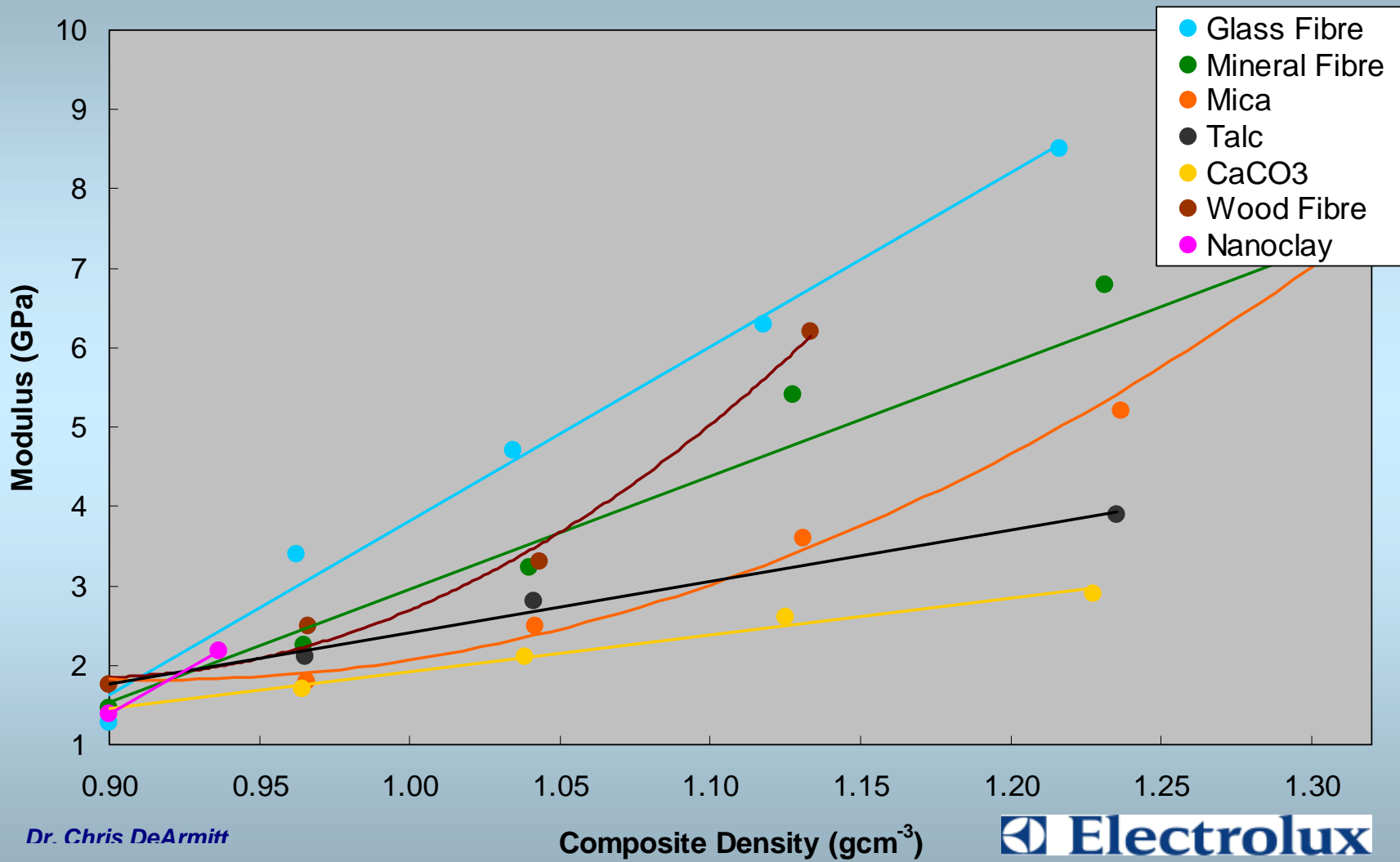
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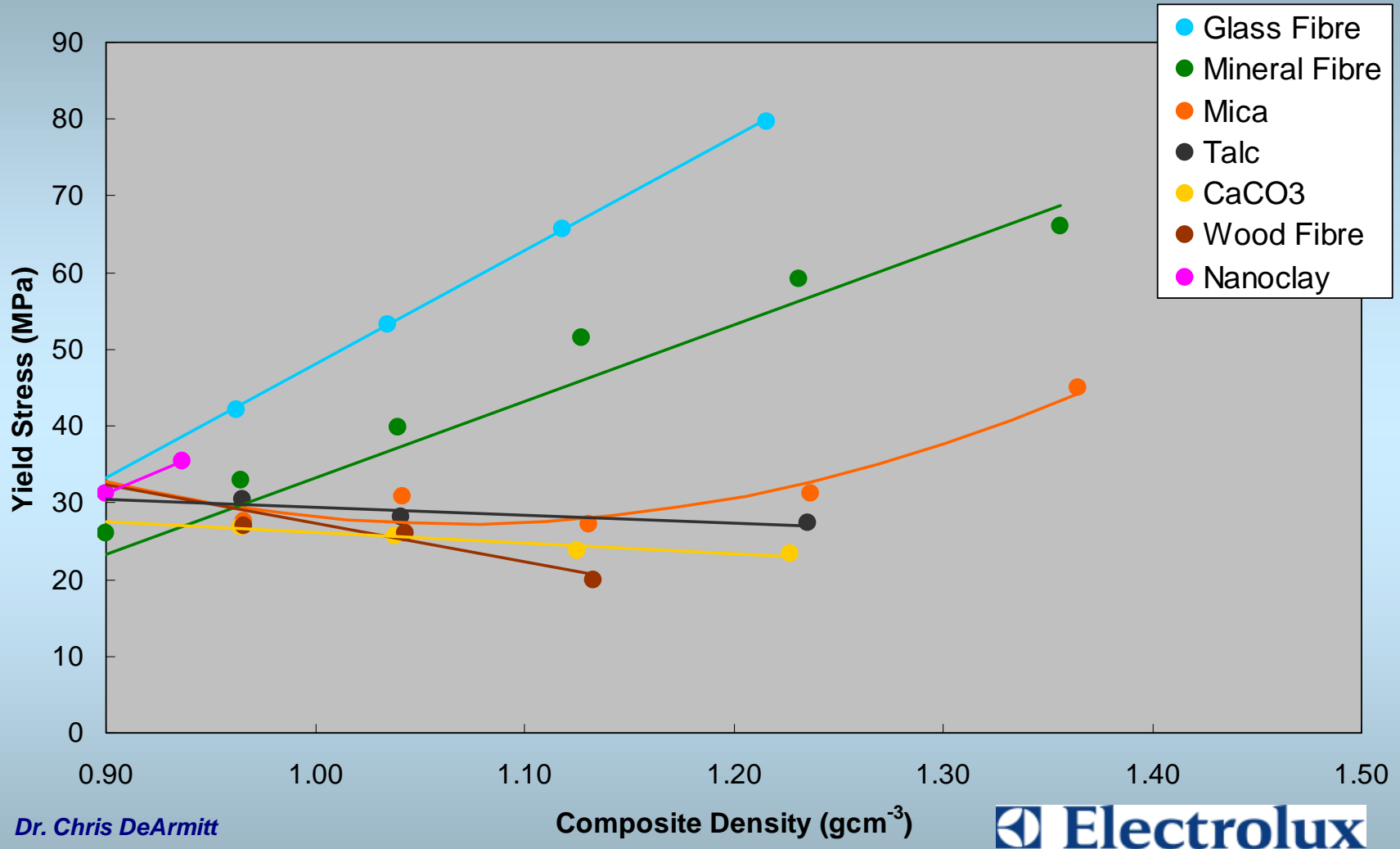
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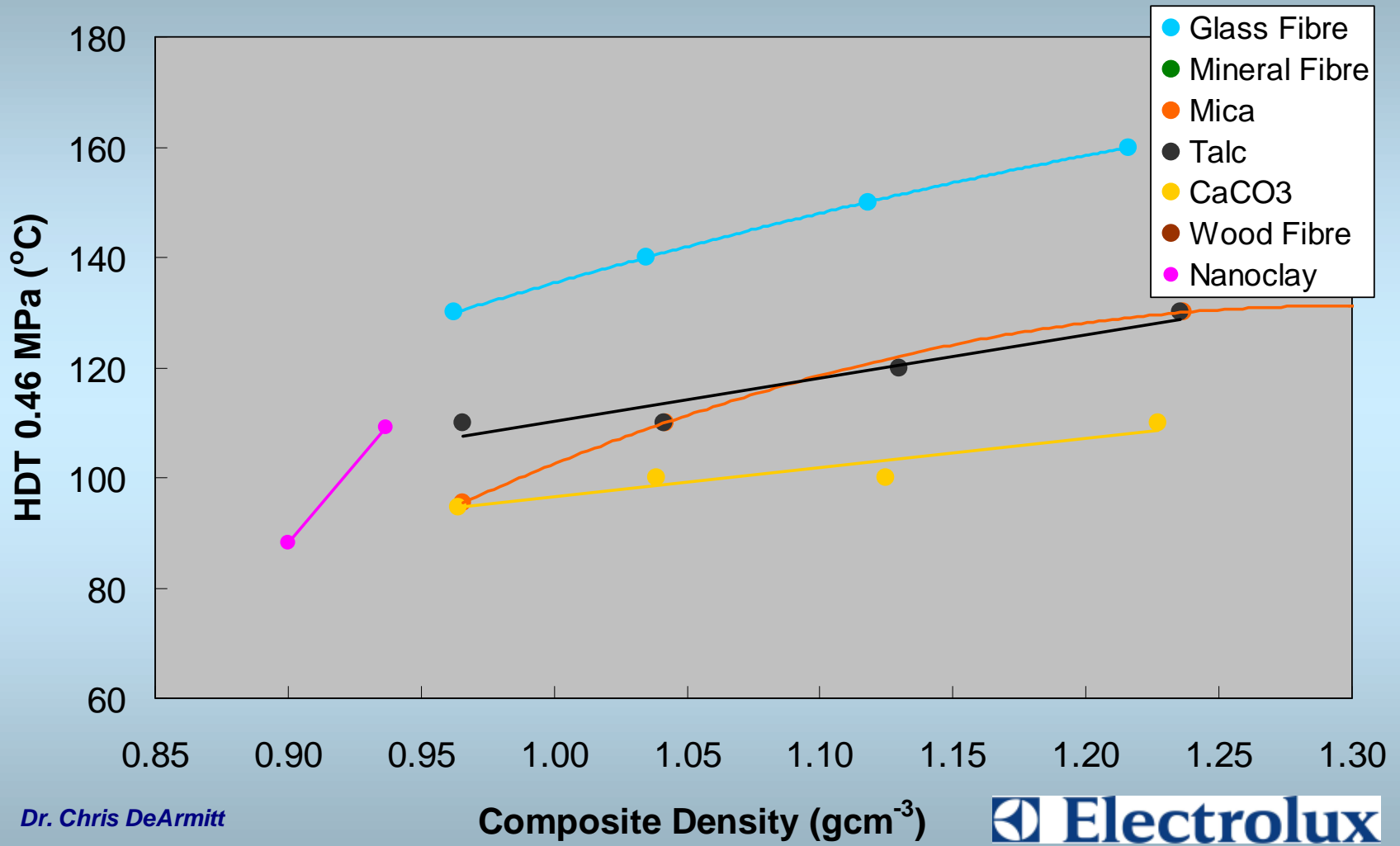
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Engineering Polymers

- Increased modulus
- Increased tensile strength
- Increased heat resistance (HDT)
- Increased flame retardance
- Greater chemical resistance
- Minimal impact on toughness

Conclusion

- Nano-clay based composites offer no advantage in terms of mechanical performance, density or price.
- They do offer good barrier properties, useful for packaging.
- Good flame retardance is possible combined with good mechanical performance (halogen free).
- Nano-composites are not yet ready for wide use. This can be expected to change if the performance can be tuned and the price lowered.