

UNIVERSITY OF TEXAS AT DALLAS - DEPARTMENT OF PHYSICS
PHYSICS COLLOQUIUM

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Kusch Auditorium, FN 2.102

**Magnetic nanoparticles and nanocomposite
magnets**

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Theoretical calculations have predicted very high energy products — the figure of merit of permanent magnets, for exchange-coupled nanocomposite magnets. Progress in our experiments has been made recently by using “bottom-up” approaches to fabricate the nanocomposite magnets. The first step of these novel approaches involves synthesis and characterization of the hard and soft magnetic nanoparticles. The nanoparticles with different size and shape were synthesized by means of the chemical solution methods. Mixed powder particles were then consolidated with unconventional compaction techniques to form bulks with high density and retained nanostructures. Thanks to the well controlled particle size and the grain size, strong magnetic exchange coupling has been obtained between the hard and the soft phases which makes these approaches promising for producing next generation of permanent magnets with very high energy products.

About the speaker: Dr. Liu received his Ph.D in Physics from University of Amsterdam, the Netherlands and Master degree in Materials Science from Central-south University, China. He was a faculty member at Louisiana Tech University for three years before joining UTA in 2002. He has been working in research in magnetic materials for 20 years.