

Nanotechnology

by

Hilmar Schnell

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diamond

C_{60}
"buckminsterfullerene"

graphite

(10,10) tube

AIRBUS Symposium
25 November 2003, Hamburg, Germany

Potential for Aircraft Structures

Agenda 1/2

Session Chair: J. Kumpfert

10:00	Introduction	J. Kumpfert
10:10	Nanotechnologies of EADS-CRC in Cooperation with Russia	R. Buetje
10:30	Overview on Nanotechnologies and the Situation in the U.S.	T-W. Chou, Univ. of Delaware
11:30	Coffee Break	

Session Chair: W. Entelmann

11:45	Nanocomposites – Possibilities and Pitfalls to improve Matrix Properties	K. Schulte, TUHH (CNT), J.F. Gerard, Univ. of Lyon (Non-CNT)
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13:30 Lunch Break

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Agenda 2/2

14:30 Nanotechnologies & Reinforcement

Fibres

P. Poulin, Univ. of Bordeaux

Session Chair: K. Schulte

15:10 Nanotechnologies & Surfaces

M. Geistbeck, EADS-CRC

16:00 Coffee Break

16:15 Nanotechnologies & Metals

L. Gimeno-Fabra, EADS-CRC

17:00 Conclusions

K. Schulte, J. Kumpfert

17:30 Finish

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Potential Nanotechnologies for Aircraft Structures

Areas of opportunity & potential benefits

Decreasing maturity level

Nano-modified coatings

- Chromate-free corrosion protection
- High wear-resistant coatings (e.g. windows)
- Coatings with new functions (fretting inhibition, water repellancy,...)

Nano-modified matrices of polymer composites

- Improved mechanical properties (strain to failure, fracture properties, impact, shear strength, stiffness, ..)
- Improved physical properties (higher glass transition temperature, higher thermal conductivity, higher electrical conductivity, improved fire resistance, ...)

Nanostructured metals

- Improved mechanical properties (improved strain to failure/fracture toughness & strength at the same time, improved fatigue properties,...)
- Improved physical properties (corrosion, ...)

Nano-modified fibres

- Improved mechanical properties (stiffness, strength) – long-term perspective

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