

EUROMECH

Final Report

EUROPEAN MECHANICS SOCIETY

Please send this report to the Secretary General of EUROMECH, within one month after the Colloquium.

EUROMECH Colloquium No: 394

Title Theory and Numerics of Anisotropic Materials at Finite Strains

Dates and location: Mar. 29-31, 1999, Technical University of Graz

Chairperson: Klaus Hackel

Co-Chairperson: Christian Michel, Christian Celigoy

Is there need of another Colloquium on the same or a related subject? Which year? 2002

Full registration fee: at s 1120.-

What other funding was obtained? at s 12.500,- by Technical University of Graz

What were the participants offered? beverages and pastry during coffee breaks, reception by the Mayor of the city of Graz (bullet), reception by the Governor of the State of Styria (bullet), guided city tour.

Number of members of EUROMECH (reduced registration fee): 23

Number of non-members of EUROMECH (full registration fee): 20

Number of participants from each country

Austria	<u>17</u>	Germany	<u>23</u>	Romania	
Belgium	.....	Great Britain	<u>1</u>	Russia	<u>1</u>
Byelorussia	.....	Greece	.....	Slovakia	.....
Bosnia	.....	Hungary	.....	Slovenia	.....
Bulgaria	.....	Ireland	.....	Spain	.....
Croatia	<u>1</u>	Italy	.....	Sweden	<u>1</u>
Czech Republic	.....	Latvia	.....	Switzerland	.....
Denmark	.....	Lithuania	.....	Ukraine	.....
Estonia	.....	Netherlands	.....	Yugoslavia	.....
Finland	.....	Norway	.....	Others	<u>3</u>
France	<u>1</u>	Poland	<u>1</u>	Total	<u>43</u>
Georgia	.....	Portugal	.....	

EUROMECH Colloquium 394

Theory and Numerics of Anisotropic Materials at Finite Strains

**Chairmen: Klaus Hackl, Graz, Austria,
Christian Miehe, Stuttgart, Germany and
Christian Celigoj, Graz, Austria**

The colloquium took place on March 29th.–31th. 1999 at the Technical University of Graz. There were 43 participants from nine countries who presented 28 contributions.

The presentations were in general concerned with the development of constitutive laws and numerical algorithms for large strain anisotropy as well as the simulation of the behavior of specific materials. A broad range of different types of materials and effects as well as theoretical and numerical approaches and ideas was covered.

Let us give a short overview of the various topics treated during the colloquium. Those were the mathematical, physical and thermodynamical foundations for different anisotropic material laws such as hyperelasticity, plasticity and viscoplasticity with isotropic and kinematic hardening and damage or granular and other materials with microstructure. Phenomena considered include localization, texture development, phase transitions and shape memory effects. Many contributions introduced new numerical algorithms and models for problems like crystal-plasticity, damage mechanics or anisotropic plates and shells. Finally there were presentations dealing with parameter-identification from experimental data, the relation between microscopic and macroscopic properties of materials and approaches using homogenization techniques.

The meeting was characterized by lively discussions. The organizers believe that it has provided an overview over the recent progress made in the field considered. Also many new results have been presented which will have a significant impact on the future development of the field.

The proceedings of the colloquium are planned to appear as a special issue of the *International Journal of Solids and Structures*.

May 11, 1999 Klaus Hackl