

Application of Pressure Sensitive Paint

-Theory and Practice -

organized by DLR in cooperation with Tohoku University,
University of Hohenheim, ONERA, and NRC

February 27 – March 03, 2017

Göttingen

Monday, February 27, 2017

Time	Lecture	
08:00	Registration	I. Micknaus, C. Rosenstock
08:45 – 09:15	Welcome/Organization	L. Koop, U. Henne
09:15 – 10:15	General Overview - historical background - physical background - PSP work groups - existing systems	R. H. Engler
10:15 – 10:45	Coffee break	
10:45 – 11:45	Pressure sensitive paints – a chemical point of view - binary paint - properties of different types of paint - binder materials - some practical experiences	V. Ondrus
11:45 – 12:15	Self-Introduction of Participants	
12:15 – 13:00	Lunch + Coffee	
13:00 – 14:00	Basic Molecular Photochemistry - energy balance and the derivation of equations - the Stern-Volmer law – comparison of dynamic and static quenching - Henry and Langmuir diffusions - influence of temperature	Y. Mebarki
14:00 – 14:45	Intensity Method - pressure calculation - hardware requirements of intensity systems - calibration technique	M. Hilfer
14:45 – 15:15	Coffee break	
15:15 – 16:00	Lifetime based PSP - scanning system - Lifetime imaging - hardware requirements - Gate optimization	D. Yorita
16:00	Meeting of Lecturers	
16:15 -	Welcome at the DLR canteen	

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Tuesday, February 28, 2017

Time	Lecture	
08:30 – 9:15	Basics of unsteady PSP <ul style="list-style-type: none">- requirements for unsteady measurements- fast PSP concept- theoretical limit of PSP response time- fast PSP development (paint formulation, step response)- verification tests for unsteady measurements	K. Asai
09:15 – 10:00	Data Reduction <ul style="list-style-type: none">- basics of data processing- marker recognition- camera calibration- resection- deformation- GPU programming	Y. Le Sant
10:00 – 10:30	Coffee break	
10:30 – 11:15	Camera Systems and their properties <ul style="list-style-type: none">- principles/characteristics- camera types- unwanted effects	A. Weiss
11:15 – 12:00	Light Sources <ul style="list-style-type: none">- characteristics of light sources- optical filters- comparison of lasers, flash lamps, LED, ...	R. H. Engler
12:00 – 12:15	Group Photo (at DLR entrance)	
12:15 – 13:00	Lunch + Coffee	
13:00 – 13:30	Hardware Handling	U. Henne
13:30 – 13:45	Overview of experiments to be carried out	U. Henne
13:45 – 17:15	Practical Session 1	

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Wednesday, March 01, 2017

Time	Lecture	
08:15 – 09:15	Advanced Techniques <ul style="list-style-type: none">- angular effects- filter leakage- self illumination- pixel wise calibration- temperature correction	M-C. Merienne
09:15 – 10:00	Principle of Temperature-Sensitive Paint (TSP) and its Application in Aerodynamic Testing <ul style="list-style-type: none">- thermal quenching- global temperature measurement- transition detection	S. Risius
10:00 – 11:30	Coffee break + Poster Session	
11:30 – 12:15	Combination of PSP/TSP with other techniques <ul style="list-style-type: none">- TSP and balance measurement- PSP and temperature measurement- PSP and Schlieren visualization- TSP / PSP and velocity measurement	J. Ost
12:15 – 13:00	Lunch + Coffee	
13:00 – 13:45	Facility tour I	
13:45 – 17:00	Practical Session 2	

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Thursday, March 03, 2017

Time	Lecture
08:15 – 08:30	Organisational topics
08:30 – 10:00	Practical Session 3
10:00 – 10:30	Coffee break
10:30 – 12:15	Practical Session 3
12:15 – 13:00	Lunch + Coffee
13:00 – 13:45	Facility tour II
13:45 – 17:00	Practical Session 4
19:00 -	Dinner (Restaurant “Kartoffelhaus”)

Friday, March 03, 2017

Time	Lecture
08:30 – 10:00	Practical Session 5
10:00 – 10:30	Coffee break
10:30 – 11:45	Practical Session 5
11:45 – 12:15	Future Aspects of PSP Technique round table discussion
12:15 – 12:30	Final Discussion and Assessment
12:30 – 13:15	Lunch + Coffee
13:15	End