

Application of Pressure Sensitive Paint

-Theory and Practice -

organized by DLR in cooperation with AIT, NASA, NRC, ONERA,
Universities of Hohenheim, Notre Dame, and Tohoku

February 18 – 22, 2019

Göttingen

Monday, February 18, 2019

Time	Lecture	
08:15	Registration	I. Micknaus, C. Rosenstock
09:00 – 09:30	Welcome/Organization	L. Koop, U. Henne
09:30 – 10:15	Introduction to PSP - basics - existing systems - applications	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 diffusion - influence of temperature	M.-C. Merienne Y. Mebarki
14:00 – 15:00	Intensity Method - pressure calculation - hardware requirements - calibration technique	U. Henne
15:00 – 15:30	Coffee break	
15:30 – 16:15	Lifetime based PSP	N. Roozeboom
16:30 -	Welcome at the DLR canteen	

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Tuesday, February 19, 2019

Time	Lecture	
08:30 – 9:15	Camera Systems and their properties <ul style="list-style-type: none">- principles/characteristics- camera types- unwanted effects	A. Weiss
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	Advanced Techniques <ul style="list-style-type: none">- angular effects- filter leakage- self illumination- pixel wise calibration- temperature correction	M-C. Merienne
11:15 – 11:30	Group Photo (at DLR canteen)	
11:30 – 12:15	Facility tour I	
12:15 – 13:00	Lunch + Coffee	
13:00 – 13:30	Hardware Handling and Safety Instructions	U. Henne
13:30 – 13:45	Overview of Experiments to be Carried out	U. Henne
13:45 – 17:00	Practical Session 1 (Including Coffee break)	

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Wednesday, February 20, 2019

Time	Lecture	
08:30 – 09:15	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	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	Y. Egami
10:00 – 11:30	Coffee break + Poster Session	
11:30 – 12:15	Facility tour II	
12:15 – 13:00	Lunch + Coffee	
13:00 – 13:45	Current Challenges to Increase the Application Fields of PSP/TSP Techniques <ul style="list-style-type: none">- motion-capturing PSP/TSP method for rotating machinery- PSP/TSP and shear stress- ...	H. Sakaue
13:45 – 17:00	Practical Session 2 (Including Coffee break)	

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Thursday, February 21, 2019

Time	Lecture	
08:30 – 08:40	Organizational topics	
08:40 – 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 – 14:00	Noise reduction and image filtering - characterization of noise - image filtering: convolution, frequency domain filters - conditional averaging - feature extraction	M. Hilfer
14:00 – 17:00	Practical Session 4 (Including Coffee break)	
19:00 -	Dinner (Restaurant “Kartoffelhaus”)	

Friday, February 22, 2019

Time	Lecture	
08:45 – 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	