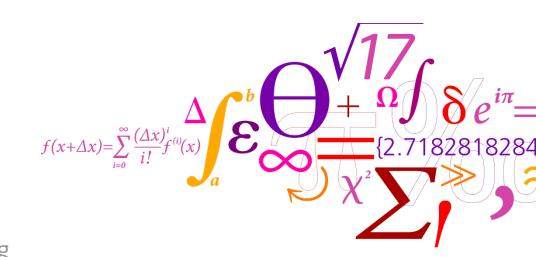


# Overview of radiation mechanisms

Jesper Schramm



**DTU Mechanical Engineering**Department of Mechanical Engineering

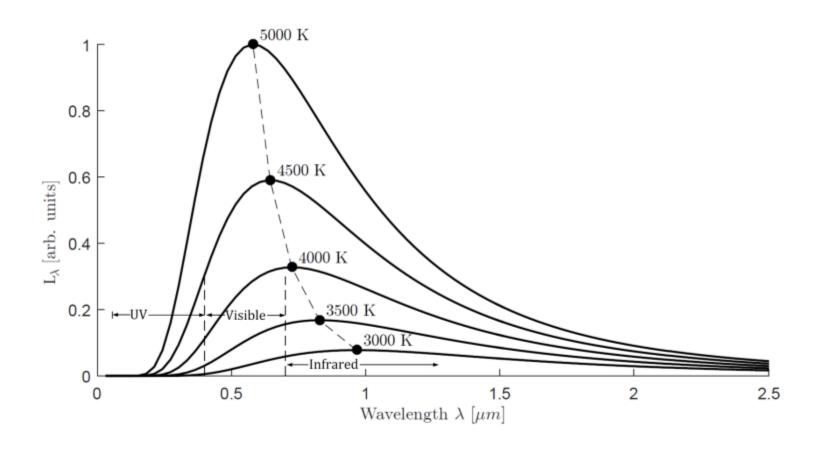


# Overview of radiation mechanisms

- General
- Adressed in RADIADE



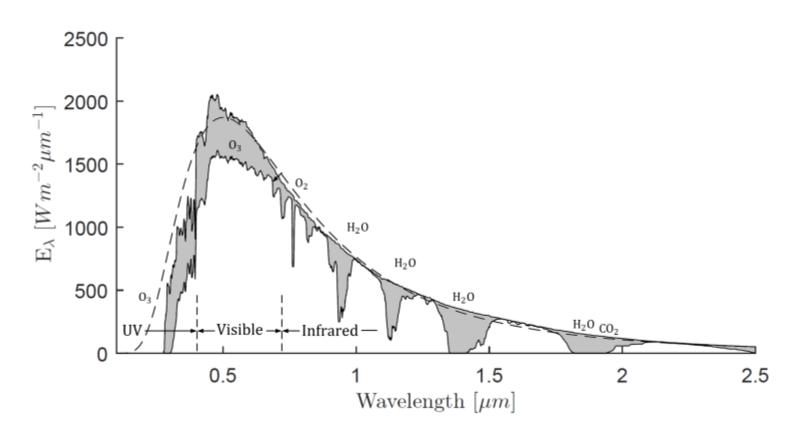
# Black body radiation





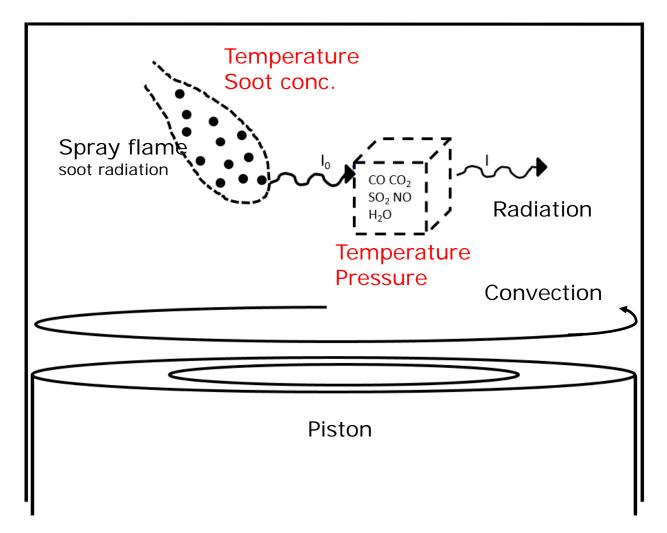
# Solar radiation

• Influence of gases



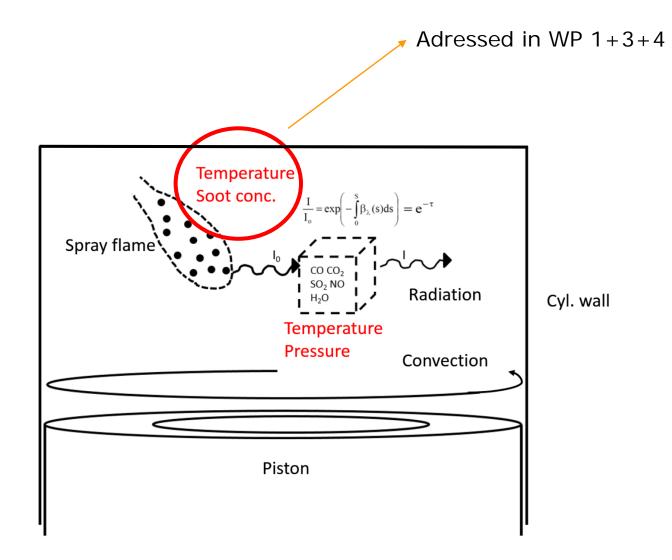


## Heat transfer mechanisms



Cyl. wall



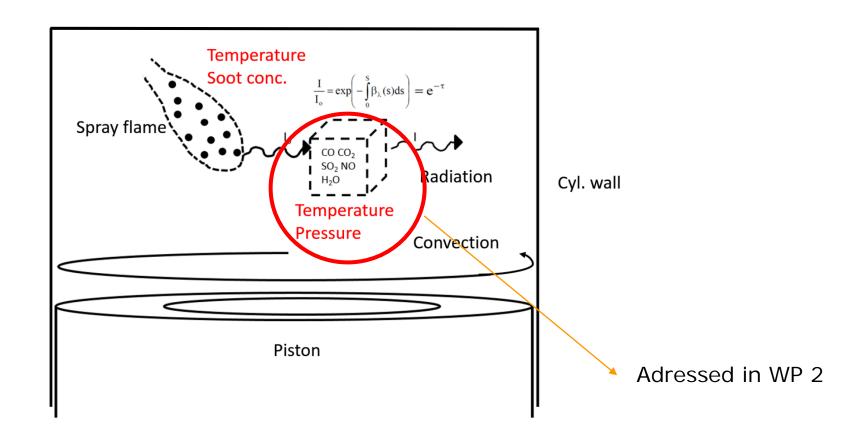






	8:45-9:15 9:15-9:25	Welcome Introduction Jesper Schramm <sup>a</sup>
	9:25-9:40	Overview of Radiation Mechanisms  Jesper Schramm <sup>a</sup>
	9:40-10:05	Absorption by gases – Gas cell measurements Sønnik Clausen <sup>b</sup>
	10:05-10:30	Line-of-sight measurements in stable gas flames  Anders Ivarsson <sup>a</sup>
	10:30-10:45	Coffee break
	10:45-11:10	Line-of-sight measurements in spray flames Fredrik Westlye <sup>a</sup>
l	11:10-11:35	Estimation of soot temperature and radiation in spray flames  Anders Ivarsson <sup>a</sup>
	11:35-12:30	Lunch break
	11:35-12:30 12:30-12:55	Lunch break  Modelling of combustion and soot formation in various spray flames  Kar Mun Pang <sup>a</sup>
		Modelling of combustion and soot formation in various spray flames
	12:30-12:55	Modelling of combustion and soot formation in various spray flames  Kar Mun Pang <sup>a</sup> Modelling of combustion and soot radiation in a large two stroke marine engine
C	12:30-12:55 12:55-13:20 13:20-13:45	Modelling of combustion and soot formation in various spray flames  Kar Mun Pang <sup>a</sup> Modelling of combustion and soot radiation in a large two stroke marine engine  Kar Mun Pang <sup>a</sup> Radiation measurements in a large 2-stroke diesel engine
	12:30-12:55 12:55-13:20 13:20-13:45 13:45-14:00	Modelling of combustion and soot formation in various spray flames  Kar Mun Pang <sup>a</sup> Modelling of combustion and soot radiation in a large two stroke marine engine  Kar Mun Pang <sup>a</sup> Radiation measurements in a large 2-stroke diesel engine  Johan Hult <sup>c</sup> , Jesper Schramm <sup>a</sup>
	12:30-12:55 12:55-13:20 13:20-13:45 13:45-14:00 14:00-15:00	Modelling of combustion and soot formation in various spray flames  Kar Mun Pang <sup>a</sup> Modelling of combustion and soot radiation in a large two stroke marine engine  Kar Mun Pang <sup>a</sup> Radiation measurements in a large 2-stroke diesel engine  Johan Hult <sup>c</sup> , Jesper Schramm <sup>a</sup> Coffee break  Summary and discussion



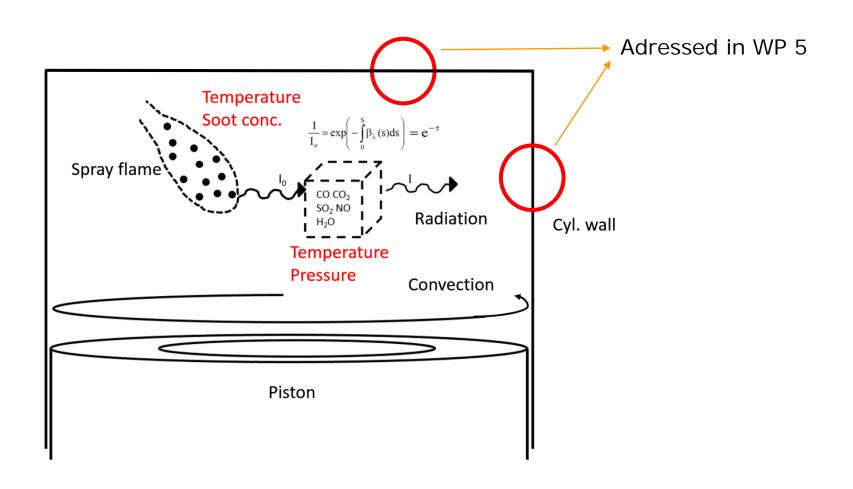






8:45-9:15 9:15-9:25	Welcome Introduction Jesper Schramm <sup>a</sup>		
9:25-9:40	Overview of Radiation Mechanisms  Jesper Schramm <sup>a</sup>		
9:40-10:05	Absorption by gases – Gas cell measurements Sønnik Clausen <sup>b</sup>		
10:05-10:30	Line-of-sight measurements in stable gas flames  Anders Ivarsson <sup>a</sup>		
10:30-10:45	Coffee break		
10:45-11:10	Line-of-sight measurements in spray flames Fredrik Westlye <sup>a</sup>		
11:10-11:35	Estimation of soot temperature and radiation in spray flames  Anders Ivarsson <sup>a</sup>		
11:35-12:30	Lunch break		
12:30-12:55	Modelling of combustion and soot formation in various spray flames Kar Mun Pang <sup>a</sup>		
12:55-13:20	Modelling of combustion and soot radiation in a large two stroke marine engine Kar Mun Pang <sup>a</sup>		
13:20-13:45	Radiation measurements in a large 2-stroke diesel engine Johan Hult <sup>c</sup> , Jesper Schramm <sup>a</sup>		
13:45-14:00	Coffee break		
14:00-15:00	Summary and discussion  Jesper Schramm <sup>a</sup>		
15:00-16:00	Networking		
End of Meet	End of Meeting		



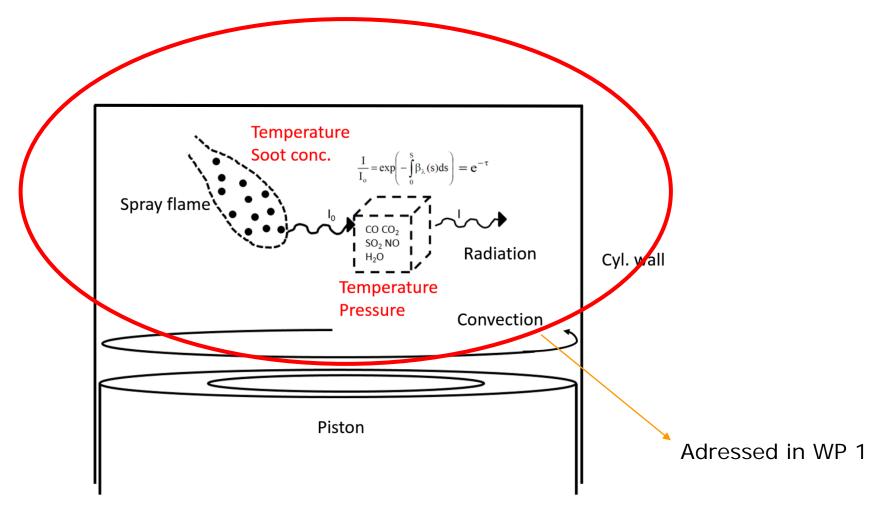


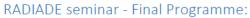




8:45-9:15 9:15-9:25	Welcome Introduction Jesper Schramm <sup>a</sup>		
9:25-9:40	Overview of Radiation Mechanisms  Jesper Schramm <sup>a</sup>		
9:40-10:05	Absorption by gases – Gas cell measurements Sønnik Clausen <sup>b</sup>		
10:05-10:30	Line-of-sight measurements in stable gas flames  Anders Ivarsson <sup>a</sup>		
10:30-10:45	Coffee break		
10:45-11:10	Line-of-sight measurements in spray flames Fredrik Westlye <sup>a</sup>		
11:10-11:35	Estimation of soot temperature and radiation in spray flames  Anders Ivarsson <sup>a</sup>		
11:35-12:30	Lunch break		
12:30-12:55	Modelling of combustion and soot formation in various spray flames  Kar Mun Pang <sup>a</sup>		
12:55-13:20	Modelling of combustion and soot radiation in a large two stroke marine engine  Kar Mun Pang <sup>a</sup>		
13:20-13:45	Radiation measurements in a large 2-stroke diesel engine Johan Hult <sup>c</sup> , Jesper Schramm <sup>a</sup>		
13:45-14:00	Coffee break		
14:00-15:00	Summary and discussion  Jesper Schramm <sup>a</sup>		
15:00-16:00	Networking		
End of Meet	End of Meeting		









	5-9:15 5-9:25	Welcome Introduction Jesper Schramm <sup>a</sup>	
9:2	5-9:40	Overview of Radiation Mechanisms  Jesper Schramm <sup>a</sup>	
9:4	0-10:05	Absorption by gases – Gas cell measurements  Sønnik Clausen <sup>b</sup>	
10:	05-10:30	Line-of-sight measurements in stable gas flames  Anders Ivarsson <sup>a</sup>	
10:	30-10:45	Coffee break	
10:	45-11:10	Line-of-sight measurements in spray flames Fredrik Westlye <sup>a</sup>	
11:	10-11:35	Estimation of soot temperature and radiation in spray flames  Anders Ivarsson <sup>a</sup>	
11:	35-12:30	Lunch break	
12:	30-12:55	Modelling of combustion and soot formation in various spray flames  Kar Mun Pang <sup>a</sup>	
12:	55-13:20	Modelling of combustion and soot radiation in a large two stroke marine engine  Kar Mun Pang <sup>a</sup>	
13:	20-13:45	Radiation measurements in a large 2-stroke diesel engine Johan Hult <sup>c</sup> , Jesper Schramm <sup>a</sup>	
13:	45-14:00	Coffee break	
14:	00-15:00	Summary and discussion Jesper Schramm <sup>a</sup>	
15:	00-16:00	Networking	
End	End of Meeting		



Where did we perform well in RADIADE?

Where did we not perform so well?

To be answered by the end of seminar