

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Fundamentals of Combustion for Propulsion

Subject Co-ordinator - Prof. S Varunkumar, Prof. H S Mukunda

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction  
Lecture 2 - Combustion processes in ICE and Gas turbine engines  
Lecture 3 - Combustion in solid and liquid rocket motors  
Lecture 4 - Equilibrium  
Lecture 5 - Chemical kinetics, Equilibrium vs rate controlled  
Lecture 6 - Demonstration of NASA-CEA  
Lecture 7 - Premixed and diffusion flames  
Lecture 8 - Premixed and diffusion flames  
Lecture 9 - Quenching, flammability and other limit phenomena  
Lecture 10 - Conservation equations  
Lecture 11 - Integral Analysis of flame  
Lecture 12 - Solid propellant combustion  
Lecture 13 - Erosive burning  
Lecture 14 - Instability in solid rockets  
Lecture 15 - Analysis of p-t traces - Part II  
Lecture 16 - Statistical representation of composite propellants in HeQuID - geometry and thermochemistry  
Lecture 17 - HeQuID model - Parameter estimation  
Lecture 18 - Effects of Al - extended HeQuID model  
Lecture 19 - Instability in solid rockets - II  
Lecture 20 - Tutorial  
Lecture 21 - Liquid propellant rockets - Part I  
Lecture 22 - Liquid propellant rockets - Part II  
Lecture 23 - Combustion in liquid rockets  
Lecture 24 - Instabilities in liquid rockets and gas turbine after burners  
Lecture 25 - CFD modeling aspects - Fundamentals  
Lecture 26 - CFD modeling aspects - Modeling approaches  
Lecture 27 - Effect of turbulence on flames  
Lecture 28 - Scramjets - Part I  
Lecture 29 - Scramjets - Part II

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Lecture 30 - Summary - Premixed flames  
Lecture 31 - Summary - Non-premixed flames  
Lecture 32 - Summary - Solid rocket propulsion  
Lecture 33 - Additional Insights