



CORROSION PROTECTION METHODS

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PRE-REQUISITES : Chemical Thermodynamics, Phase transformation and Electrochemistry

INTENDED AUDIENCE : 1. Bachelor and Master students
2. Industry people, where corrosion is a problem
3. PhD student working in corrosion

INDUSTRY SUPPORT : Oil companies, Chemical companies and Power sector, construction, Steel

COURSE OUTLINE :

The course will focus on different corrosion protection methods, like cathodic and anodic protection, design change, change of environment, inhibitors, and coatings. In addition, it will discuss the effect of metallurgy, processing, microstructure and surface texture on the corrosion protection. This is very important for students and industry personnel. It will also help them to assess the degree of corrosion damage and accordingly select suitable protection route.

ABOUT INSTRUCTOR :

Prof. Kallol Mondal is an associate professor in the department of Materials Science and Engineering, IIT Kanpur. His specializations are phase transformations of metals and alloys, corrosion and oxidation behavior and multi-phase steel development.

COURSE PLAN :

Week 1: Introduction:

- Different methods for corrosion protection

Week 2: Cathodic protection

- Principle of cathodic protection
- Calculation method to determine protection efficiency
- Materials used for cathodic protection

Week 3: Anodic protection

- Principle of anodic protection
- Calculation method to determine protection efficiency

Week 4: Protection by Design

- Different design aspects for protection of metals and alloys
- Best practices

Week 5: Protection by Inhibitor

- Principle of using inhibitor
- Reaction mechanism for corrosion protection
- Different inhibitors available in use

Week 6: Protection by Coating

- Philosophy of using coating
- Different coating routes
- Coating methods

Week 7: Protection by change of environment

- Philosophy of using change in environment
- Different ways of execution of change in environment

Week 8: Effect of microstructure, Stress, surface texture and composition on corrosion protection

- Alloying
- Structures
- Surface texture