



CLASSICS IN TOTAL SYNTHESIS-I

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IIT Bombay

PRE-REQUISITES : BSc and MSc (1st year)

INTENDED AUDIENCE : Chemistry Masters students/Chemistry PhD students

INDUSTRY SUPPORT : Most of the pharmaceutical companies

COURSE OUTLINE :

Some of the classical total synthesis of natural and unnatural products reported between 1950-2000 will be discussed in details. This course will be ideal for 2nd year MSc students and 1st year Ph.D students. This course will be followed by part-II where some important total synthesis of natural products disclosed between 2001 to-date will be discussed.

ABOUT INSTRUCTOR :

Prof. Krishna P. Kaliappan is currently a Professor at Department of Chemistry at IIT Bombay. He joined the Department in 2001 as an Assistant Professor and has taught several courses in Organic Chemistry. He also held several administrative positions including Head (Department of Chemistry), Associate Dean (R&D and Dean (Faculty Affairs). He has guided 24 PhD students and currently guiding 15 Ph.D students

COURSE PLAN :

Week 1: General Introduction to Total Synthesis & Syntheses of 3-membered natural products

- Illudin M & C
- FR900848

Week 2: Total Syntheses of four-membered and five-membered natural products

- Cubane
- Endiandric Acids
- Prostaglandins
- Penicillin

Week 3: Total Syntheses of other five-membered natural products and triquinanes

- Thienamycin
- Biotin
- Lactacystin
- Isocomene
- Silphiperfol-6-en-5-one
- Hirsutene
- Capnellene

Week 4: Total Syntheses of triquinanes

- Silphiperfolene
- Modephene
- Silphiperfol-6-en-5-one
- Capnellene
- Hirsutene
- Isocomene
- Ceratopicanol
- Subergorgic acid
- Deoxymagellaninone
- Coriolin

Week 5: Total Syntheses of six-membered natural products

- Longifolene
- Carpanone
- Mevinolin
- Gibberellic acid

Week 6: Total Syntheses of alkaloids

- Perhydrohistrionicotoxin
- Strychnine
- Reserpine

Week 7: Total Syntheses of alkaloids

- Yohimbine
- Quinine
- Dendrobine
- Morphine

Week 8: Total Syntheses of alkaloids

- Methylhomosecodaphniphyllate & secodaphniphyllane
- Lysergic acid
- Galanthamine
- Epibatidine
- Swainsonine

Week 9: Total Syntheses of alkaloids and steroids

- Staurosporine
- Manzamine A
- Colchicine
- Progesterone
- Steroids

Week 10: Total Syntheses of steroids & diterpenes

- Estrone
- Taxol

Week 11: Total Syntheses of diterpenes

- Eleutherobin
- Phorbol
- Periplanone
- Discodermolide

Week 12: Total Syntheses of macrocycles and course summary

- Epothilones
- Zaragozaic acid C
- Vineomycinone B2