

**Seminario, Departamento de Ingeniería Mecánica, Universidad de Chile**



**Lunes 26, 14:30horas**

**Sala de Proyectos Docentes de Ingeniería Mecánica, Cuarto Piso Torre Poniente,  
Beauchef 851**

**The mechanics and mathematics of bodies described by implicit  
constitutive equations**

K. R. Rajagopal  
Department of Mechanical Engineering  
Texas A&M University  
College Station, TX-77843

After discussing the need for implicit constitutive relations to describe the response of both solids and fluids, I will discuss applications wherein such implicit constitutive relations can be gainfully exploited. It will be shown that such implicit relations can explain phenomena that have hitherto defied adequate explanation such as fracture and the movement of cracks in solids, the response of biological matter, and provide a new way to look at numerous non-linear phenomena exhibited by fluids. They provide a totally new and innovative way to look at the problem of Turbulence. It also turns out that classical Cauchy and Green elasticity are a small subset of the more general theory of elastic bodies defined by implicit constitutive equations.