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Cover illustration: α -carrageenan double helices are packed in a trigonal array and held together by calcium ions (red) at their peripheral sulfate groups; each helix appears as a triangle in the axial projection. The sulfur atoms in alternating saccharides are shown in green and yellow, their terminal oxygen atoms blue and the remaining violet. The unit cell accommodates three helices, cations and water molecules (not shown). These structural features [*Carbohydrate Research* 337 (2002) 523–535] underscore the junction zone architecture and polymer gelation behavior. The space-filling model is rendered by Professor Rengaswami Chandrasekaran and Dr. Srinivas Janaswamy, Whistler Center for Carbohydrate Research, Purdue University, West Lafayette, IN 47907, USA.