JOHN M. ROBERTSON DIES

Noted Philips Researcher Succumbs To Heart Disease

John Mackay Robertson, materials research scientist at the Philips Research Laboratories in Eindhoven, the Netherlands, died of heart failure while at work in his laboratory on January 12, 1984. He was 42 years old. The international community of materials professionals has lost an enthusiastic and gifted member.

John Robertson was born in Britain and received his education at the University of London, where he obtained the B.S., M.Sc. and Ph.D. degrees in 1963, 1965, and 1967, respectively. He began his professional career as a lecturer at Portsmouth Polytechnic, where he worked with Dennis Elwell on crystal growth of oxides and on ferromagnetic resonance. In 1971, he joined the Philips Laboratories in Eindhoven, where he studied CVD and hydrothermal growth of iron-garnets. This work served as a prelude to a most productive and exciting period, during which he and colleagues examined the nature of liquid phase epitaxial growth of iron garnets from lead-containing fluxes. At this time (1975), the move to garnet materials for magnetic bubble devices was under way, and Robertson's work contributed quite substantially to the development of appropriate materials. The occurrence of gradients in composition and transient layers near the substrate were examined via radioactive tracer methods, a model of diffusion limited crystal growth was formulated, and segregation coefficients were determined as a function of supersaturation, misfit, and orientation. Robertson's interest in the fundamentals of flux growth continued during the remainder of his career, and his death left several papers in this field unfinished.

JOHN ROBERTSON

John Robertson was not simply a crystal grower, but preferred to be described as a "materials engineer". Indeed, his interest was always captured by the potential for innovative work. For example, when it became known in 1973 that substitution of bismuth in $Y_3Fe_5O_{12}$, or YIG, enhanced the magneto-optic properties of the material, Robertson was the first to grow epitaxial layers of Bi substituted YIG. This work led to the tuning of the magnetic properties so that thermomagnetic writing in epitaxial layers was enabled, and a number of optical switching and display devices have since sprung from the capability that his work provided.

During his study of Bi substitution in YIG, Robertson realized that large growth-induced anisotropy could be achieved in garnets without the use of magnetic rare earth ions. This led Robertson and his colleagues to develop a new high mobility material for sub-micron bubble domain devices. Similar materials were subsequently adopted for use in production.

More recently, Robertson and colleagues pioneered the application of single crystals and epitaxial growth to the fabrication of cathode-ray-tubes (CRT's). In this case, Robertson realized that a $Y_3Al_5O_{12}$, or YAG, substrate could be overgrown with an epitaxial layer that could be usefully doped with activator ions to produce a phosphor for CRT applications. Single crystal CRT's of the Robertson type exhibit high brightness and long life, and appear destined to find application where these qualities are important.

As a materials scientist, Robertson contributed in areas other than crystal growth. During the last three years, he was active in the laser treatment of materials and was recently successful in engineering both the materials properties and production methods for amorphous metal ribbons for recording head applications.

John Robertson published some ninety papers. He worked with great intensity, preferably in an areas where little was known. He possessed a faculty for cooperation with others, most particularly device oriented researchers who needed new materials. He enjoyed collaboration with a host of friends throughout the world.

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