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# INTERCALATED

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## *graphite*

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Nearly 70 papers were presented at this symposium in a three-day period, broadly covering the field of intercalated graphite. The symposium participants were well represented by nation and area of interest.

The most successful session of the conference was the joint session with Symposium G on the subject of superconductivity in low dimensional systems. The three papers in this session were excellent, establishing a bridge between conceptual approaches of workers on intercalated graphite and transition metal dichalcogenides. The joint session's success reinforces the notion of information transfer among related fields, a unique strength of the MRS format of program planning.

Overall, the symposium reflected major progress in synthesis and materials preparation, sophistication of experimental techniques and the analysis of results.

In the field of superconductivity, the success of the Ginsburg-Landau effective mass model was emphasized in explaining the high anisotropy in the critical field of superconducting graphite intercalation compounds; all that have been synthesized thus far

are in the 3-D regime. Large unexpected effects of pressure on the critical field and critical temperatures of GIC were reported.

The session on structure and phase transitions was especially interesting. By working with single crystal host materials, significant progress has been made in characterizing the crystallographic ordering of the intercalant.

A striped domain or soliton state has been reported in both the  $\text{SbCl}_5$  and  $\text{Br}_2$  system. The graphite- $\text{Br}_2$  work carried out on single crystal gave a quantitative confirmation of two-dimensional theories for the commensurate to incommensurate phase transition in system. In addition, the large X-ray coherence lengths of more than 10,000 Å indicated that high crystalline perfection can be achieved in intercalated systems.

Significant progress was reported in the field of lattice dynamics. The Born-von Karman zone-folding model received experimental support from neutron and Raman scattering experiments. The exact nature of the phase transitions in several intercalate systems was examined in papers from Japan, Europe and the U.S.

Staging was also examined using *in situ* Raman scattering and neutron scattering in a high pressure cell. The latter experiment reported evidence for non-integral stages in the graphite-alkali metal compounds under pressure. The area of staging phase diagrams seems ready for new theoretical and experimental advances.

Graphite fiber work was reported in a special session on fibers and also throughout the symposium fibers were used as a standard host material. It has now been shown that all fibers can be intercalated and that some of the more structurally perfect fibers are essentially as good a host material

for intercalation as the synthetically prepared pyrolytic graphites.

Microscopic probes of the intercalate layer such as Mossbauer and NMR were used effectively to probe the solid state chemistry associated with charge transfer.

The symposium was successful in bringing together a large number of experts in the field. The discussions were spirited. Most participants considered the session to be a valuable investment of their time and effort.

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## MRS Council sets meeting in January

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The Materials Research Society Council will meet in Atlanta on Thursday, Jan. 6, at the Airport Hilton from 9 a.m. to 5 p.m. The following day, the co-chairmen of the 1983 annual meeting will convene a meeting of symposia chairmen to plan the program. All MRS members are welcome at both meetings. On the agenda for the Council meeting are the installation of new officers -- President H.J. Leamy, First Vice President C.W. White, Second Vice President Elton N. Kaufmann, Secretary R.L. Schwoebel and Treasurer K.C. Taylor -- and councillors, reports by the Long Range Planning, Publications, Education, Membership and Finance committees, and proposals received from the membership. These may be made in person or via a councillor; in either event, they must be put on the agenda in advance through arrangement with the office of the president, H.J. Leamy, Bell Laboratories 2D346, Murray Hill, NJ 07974.

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