

New Mexico Tech

AD-A257 213



September 11, 1992

Dr. James E. Butler
Code 6170, Bldg. 207
4555 Overlook Avenue, S.W.
Naval Research Laboratory
Washington, DC 20375

SUBJECT: SEPTEMBER TECHNICAL PROGRESS AND STATEMENT OF FUNDS
REPORT (NRL Contract No. N00014-91-C-2173)

Dear Dr. Butler:

Enclosed please find our September technical progress and statement of funds report for the above-referenced contract on "Dynamic Fabrication of Diamond Thermal Management Substrates."

We appreciate the no-cost time extension until December 31, 1992.

Total end-of-August expenditures are: at CETR/New Mexico Tech - \$ 280,842, at CalTech - \$ 182,000, and at Allied-Signal, Inc. - \$ 30,900.

Naresh Thadhani has accepted a new position as Associate Professor in the School of Materials Science and Engineering at Georgia Institute of Technology, with effect from October 1, 1992.

Yours sincerely,

Naresh Thadhani

Naresh N. Thadhani
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SEPTEMBER TECHNICAL PROGRESS REPORT

Two sets of experiments on the recently purchased batch of GE synthetic diamond powder obtained from Dubbledee Harris Diamond Corporation are scheduled for this month. Powders of controlled particle size distribution have been acquired to yield maximum initial packing densities (> 70%). The powders have been treated at 800°C in argon atmosphere, similar to previous heat-treatments. Flourinated diamond powders, and diamond powders mixed with ≈ 10% melamine formaldehyde copolymer will also be tested in these experiments.

We continue to analyze the previous shock compacted diamond samples, via Raman, X-ray diffraction, and electrical resistivity. Based on these tests, several other samples have been isolated to send to CalTech for thermal conductivity measurements.

Subsequent to completing these two experiments, we shall perform one more experiment with specific types of diamond powders with the purpose of duplicating the best diamond compacts. These samples will be made available to NRL.

The principal investigator, Naresh Thadhani, will continue to monitor the program through Georgia Tech, and compile the monthly and final technical reports.

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The work reported here is done under NRL contract No. N00014-91-C-2173 to CETR, NMT, with subcontracts to CalTech and Allied-Signal, Inc. The COTR at NRL is Dr. Jim Butler (Tel: 202-767-1115), and the Program Manager at DARPA is Dr. William J. Barker (Tel: 703-696-2281).

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