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Massachusetts Institute of Technology
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Robert Oreb
Materials Science and Engineering Division
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Dear Bob:

The Laser Interferometer Gravitational-wave Observatory (LIGO) is looking to start a new round of research aimed at improved optical coatings for interferometric gravitational wave detectors. We would like to know if Advanced Thin Films would be interested in participating in this research as a coating vendor. We have included a technical white paper that gives an overview of low thermal noise optical coatings, and the directions we envision this research going. We welcome any comments or questions you may have on this paper.

Our intention is to work with a few coating vendors, discussing ideas for improving coatings, and then placing an order for coated samples for extensive measurement roughly every other month. All aspects of this, including the level of technical participation of the vendor and the timing and frequency of coating runs, is subject to negotiation to suit both sides. At the end of this multi-year project, it is possible that LIGO will want to engage in a contract to coat large interferometer optics. This is likely at least 10 years away. Shorter term, lower thermal noise coatings may be able to be applied to other precision measurement applications (such as frequency stabilization). In addition, studies of coating thermal noise may give insights into other mechanical properties (such as stress, density, annealing, etc).

We are interested in hearing from you about your interest in this project, any ideas you may have in addition to those discussed in the white paper, and any capabilities your company may have for coating characterization (such as a scatterometer, ellipsometer, nanoindenter, chemical and/or structural evaluation methods, absorption measuring, etc.) If you are interested and believe you could contribute, please let me know at the email address below. We can then arrange a telephone conversation, and, as appropriate, a face to face meeting for further planning and discussions.

Sincerely:

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