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Covalent Metrology Expands Materials Characterization Products and Services

September 26th, 2017 Santa Clara, CA – Covalent Metrology announced today that it has added two new metrology techniques to its product portfolio. The company now offers UV-Visible-Near Infrared (NIR) spectroscopy and spectral ellipsometry to complement its already successful atomic force microscopy (AFM) and white light interferometry services.

- **UV-Visible-NIR spectroscopy** is used for reflectance and transmittance measurements across the ultra-violet, visible and near infrared spectra. The Shimadzu 3700 UV-Vis-NIR employed by Covalent covers the entire spectrum from deep UV (200nm) to near infrared (2600nm).
- **Spectral ellipsometry** measures properties such as thickness, refractive index, extinction coefficient of transparent films. Covalent offers ellipsometry using a J.A. Woollam VASE (variable angle spectroscopic ellipsometry), which is the gold standard in the field.

New Instruments, same focus on better data, faster and cheaper

Optical characterization and film thickness assessment are foundational elements of many advanced materials development programs. Bringing these techniques in-house positions Covalent to provide more comprehensive services to customers in optoelectronics (including advanced displays for virtual and augmented reality), solar, flexible electronics and smart-glass applications.

Ellipsometry and spectrophotometry are complex techniques that yield rich insights when combined with powerful modeling knowledge and experience. Covalent Metrology experts support the customer team in designing the best experiment and ensuring that high quality data is generated, properly modeled and analyzed.

This product expansion strengthens Covalent's efforts to be the preferred fast-turnaround, easy-to-work-with partner for materials characterization. Covalent strives to make leading edge metrology affordable to every company. To that end, Covalent's Metrology Partners business helps customers optimize their own metrology ecosystem to better serve their R&D and product ambitions. Covalent Metrology Partners brings dedicated expertise to help in

identifying metrology gaps in techniques, instruments, and methodology and in closing these gaps. This enables customers' teams to expedite development and troubleshoot issues.

Covalent Metrology was founded by Craig Hunter, previously founding general manager of both the thin film solar business at Applied Materials and the Clean Energy Group at Intermolecular. Mr. Hunter commented, "Covalent is moving fast to improve and expand the services it offers. Ultimately our ambition is to be your one-stop shop metrology partner, providing access to more and better data, quicker and at less cost than would be possible either through traditional service labs or even, in many cases, the in-house alternatives. We are excited to announce this incremental expansion and are looking forward to further announcements soon."

About Covalent Metrology

Covalent Metrology is a new venture dedicated to improving advanced materials R&D through innovation in the metrology services business model. Covalent works with clients to elevate their metrology capabilities, resulting in better data generated in less time and at lower cost. Covalent's Analytical Services unit currently offers high quality Atomic Force Microscopy (AFM), Optical Profilometry, UV-Vis-NIR spectroscopy, and ellipsometry services at lower cost and with faster turnaround than traditional service labs. Covalent's Metrology Partners unit offers a suite of services based on client-specific development objectives aimed at improving in-house and external metrology quality, speed and cost. Headquarters are located in the heart of Silicon Valley.

Silicon Valley location:

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For more information call (408) 498-4611 or visit the Company's website at <http://www.covalentmetrology.com>.