

America Certified Electron Microscopy Technologist

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Introduction

The acronym for “certified electron microscopy technologist” is CEMT, and these letters designate the bearer as having passed the written and practical exams necessary to become “certified”! The acronym was approved by the MSA Council to more firmly provide a professional identification of certification in the area of transmission electron microscopy (TEM) of biological tissue. A CEMT may use these initials after his or her name for as long as the certification remains valid (for example, Jane Doe, AA, BS, CEMT).

The Microscopy Society of America (MSA) provides the only certification of technologists in biological transmission electron microscopy available in the Americas. The certification program is administered by the Certification Board, which is appointed by the Council of MSA. The board consists of members of the microscopy community, and it is they who develop regulations, formulate and evaluate examinations, and interpret policies. For example, the board recently revised the requirements for submitting images that are required for the practical examination.

Preparation for Certification

There are no schools, colleges, or courses that can boast “certification.” However, formal programs in electron microscopy do prepare the candidate for the written and practical exams. Time spent in intensive “hands-on” instruction may also serve as the necessary time required. For those technicians who learned TEM “on the bench,” preparation for the exams serves as a “refresher course” in all the basics of resin

chemistry, fixations, processing, etc. The employer hiring a CEMT can be assured that the person has a solid understanding of the underlying principles of sample processing (Figure 1) and electron microscopy instrumentation (Figure 2), including basic electron optics and TEM image formation.

Benefits

The certification program was initiated in 1978 to establish standards for technical skills and is recognized worldwide. It can be important in assuring prospective employers of the proficiency of the job candidate, and it may persuade an employer to hire a certified technician over an uncertified candidate. Certification can also be important in determining job classification, salary level, and the potential for advancement or promotion. A major benefit of certification is membership in a “community” of certified people—a core of “go-to” contacts. Networking is important in any field!

Certification Process

Technicians with the required educational and/or occupational qualifications can attain certification by completing an application and passing both written and practical examinations. Two examination cycles are offered each year.

The first step in certification is completing the application and submitting it with the necessary fee, letters of recommendation, and experience/education documentation to the MSA office. Once the application is processed, the candidate’s information is forwarded to the Certification Board chairperson, and the members evaluate if the applicant meets the qualifications. Written exams are given only during the



Figure 1: Preparation of thin sections of biological tissue with an ultramicrotome.

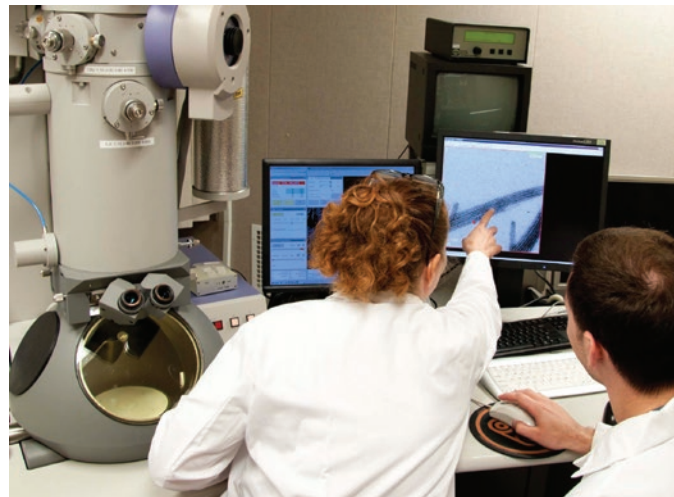
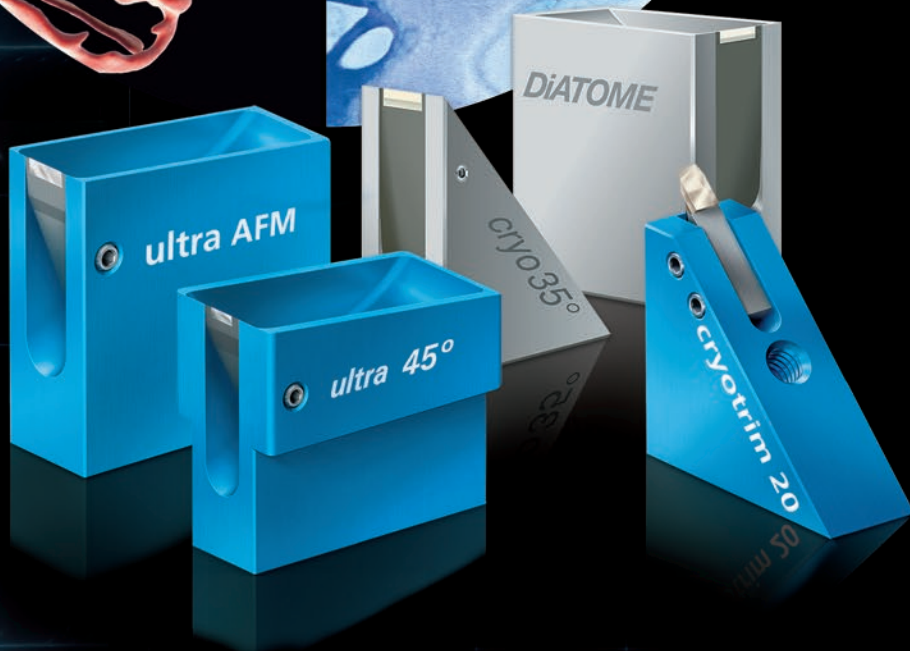
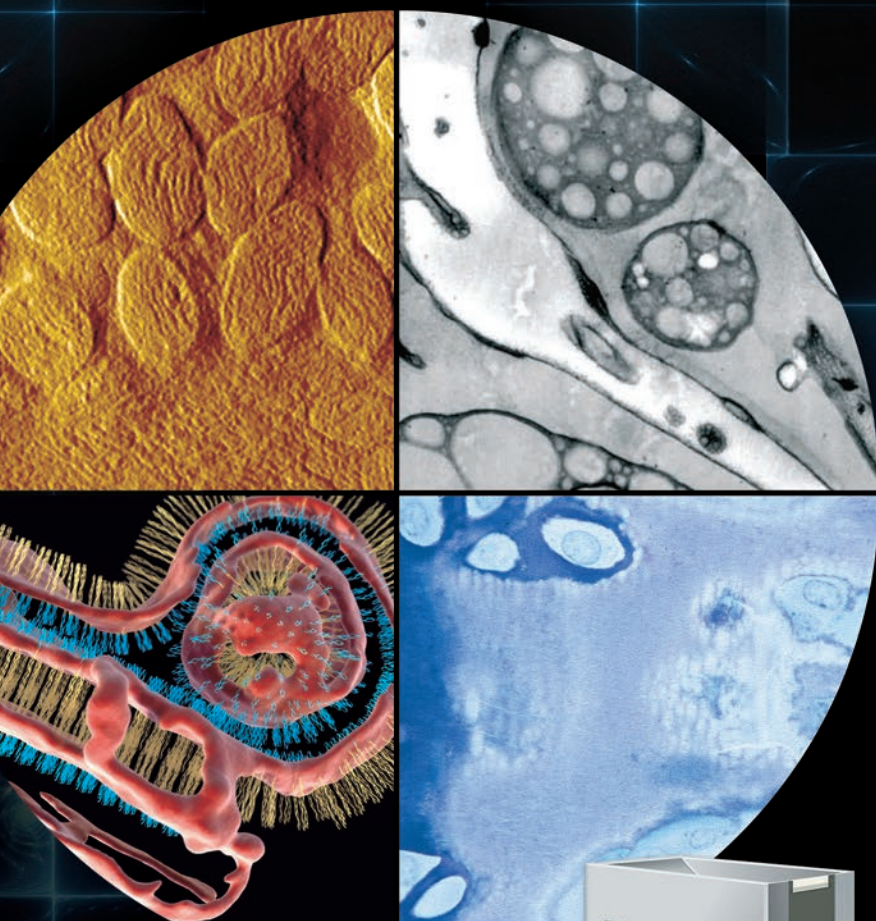


Figure 2: Imaging prepared specimens in a transmission electron microscope.

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indicated cycle (see certification website [2]), and the practical exam is not accepted until the candidate passes the written exam.

The practical examination requires the preparation of blocks, sections, and images from three different tissues (non-pathological and non-human). The practical exam is graded by at least two of the board members, who have expertise and knowledge of the submitted material. All work must be done independently by the candidate, with the exception that a supervisor or qualified individual may assist with the acquisition of the sample material. It is expected that the candidates submit their best (publication-quality) work.

Official Certificate

Successful candidates are awarded an official numbered MSA certificate and a certification CEMT pin. The initial period of certification is for one year and may be renewed on a 5-year cycle by payment of the appropriate fee. As part of the renewal process, a supervisor must confirm the technologist's continuing employment in the field.

For more information concerning certification, please refer to the MSA website [2], where prospective candidates will find detailed instructions, necessary forms, a study syllabus, and example questions for the written exam. This web page also lists the names and contact information for the board members who can answer questions regarding the certification process.

References

- [1] J Petrali, *Microscopy Today* 18(1) (2010) 40.
- [2] <http://www.microscopy.org/education/programs.cfm>.

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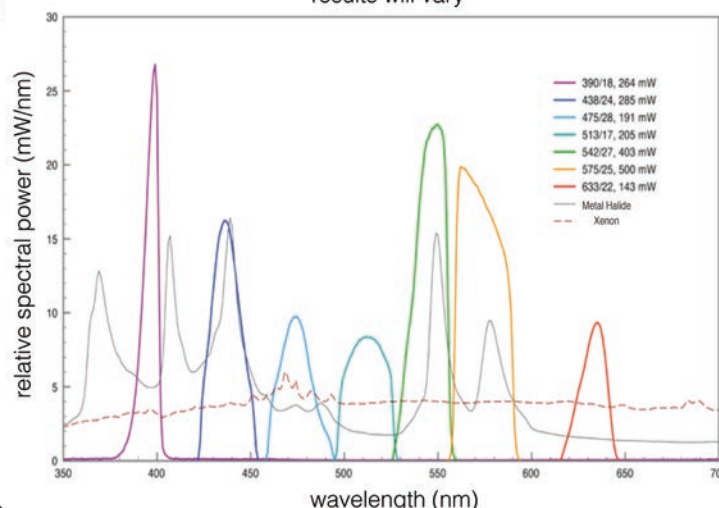
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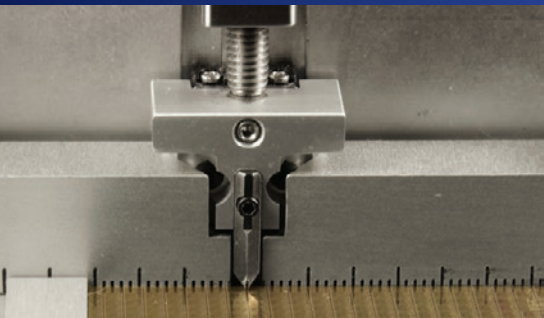
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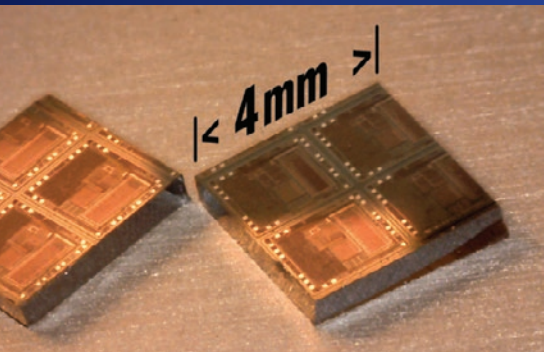
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