

# EDITORIAL

## JM<sup>3</sup> ACRONYMS

Acronyms are very useful, because they make a repetitively used term less cloudy. Not only is the repetitively used term efficiently presented, but a well-constructed acronym brings out the key message in the term and helps the reader remember it better. Because of this, we see a proliferation of acronyms across all fields in modern society. There is no exception in the fields of the *Journal of Micro/Nanolithography, MEMS, and MOEMS* (JM<sup>3</sup>). Note that we have already used two acronyms in the name of JM<sup>3</sup>. JM<sup>3</sup> itself is also an acronym, presumably a comprehensive one that is easy to remember.

According to Merriam-Webster's dictionary, an acronym is "a word formed from the initial letter or letters of each of the successive parts or major parts of a compound term." Two examples cited are NATO and radar, standing for North Atlantic Treaty Organization and radio detecting and ranging, respectively. Note that radar is commonly written in lower case. It has become a bona fide English word. In our field, the same happened to the word "laser," which stands for light amplification by stimulated emission of radiation, in case someone has already forgotten its origin. Merriam-Webster defines initialism, an abbreviation formed from initial letters, as a type of acronym. We see both types of words proliferating in JM<sup>3</sup>. MEMS and MOEMS are becoming common words, while initialisms such as PSM form a majority of JM<sup>3</sup> acronyms.

Merriam-Webster gives 1943 as the origination date for the word acronym, and 1899 for initialism. This probably points to the beginning of the wide practice of generating acronyms. To date, there are 550,000 of them according to Acronym Finder ([www.acronymfinder.com](http://www.acronymfinder.com)). There are inevitably duplications. For the word CD, there are 220 definitions on Acronym Finder. A few familiar ones are compact disc, certificate of deposit, civil defense, Canadian dollar, common denominator, and fortunately also critical dimension, which the JM<sup>3</sup> community most frequently refers to. There are also duplicate acronyms pointing to the same idea. For example, MEEF and MEF stand for mask error enhancement factor and mask error factor, respectively. In terms of meaning and ease of pronunciation, and thus the potential to become a regular English word, MEEF is better. The attenuated phase-shifting mask (AttPSM) has also been called APSM and EPSM; the alternating phase-shifting mask (AltPSM) has also been referred to as APSM and LPSM. Thus, APSM obviously is confusing. Embedded PSM can represent more PSM con-

figurations than just attenuated PSM. Levenson PSM is a way to honor the inventor but there are better ways. Do BIM and COG refer to the same object? A binary intensity mask is different from a phase-shifting mask because it is an intensity mask. The word "binary" is added to distinguish it from a gray-level mask, which is also an intensity mask. The BIM represents the most popular type of mask we use. Chrome on glass refers to a piece of blank that we use to make a BIM. However, the same piece of blank can be used to make a PSM, such as an AltPSM. In fact, the latter is still chrome on glass after the mask is made, except that there are different thicknesses in the glass. Off-axis illumination (OAI) was an exciting resolution enhancement technique when it was introduced. On-axis illumination, the normal way to illuminate at that time, could not duplicate OAI for its acronym. So, someone just called it conventional illumination. Today, OAI is as normal as on-axis illumination. Conventional illumination can mean either one. A better name for on-axis illumination is disk illumination (DIL).

It is relatively easy to create a new acronym, and some authors do this rather than take the time to look up the original one. There is also the satisfaction of creating one's own acronym. As a result, new acronyms proliferate, despite confusion and inconsistency. Therefore, it is desirable to provide a reference list of acronyms dedicated to the JM<sup>3</sup> areas. The list has to be kept current and consistent, incorporating new terms as science and technology advance and consolidating duplications or dubious ones. As a starting point, the editorial board has come up with close to 400 acronyms and is in the process of expanding and consolidating the list. The acronyms in new publications will be reviewed for induction to the list as well as for unification with existing ones. The list will be posted electronically and printed in JM<sup>3</sup> frequently. Send your suggestions, if you will. Stay tuned for our progress report.

Happy reading!

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**Editor-in-Chief**

