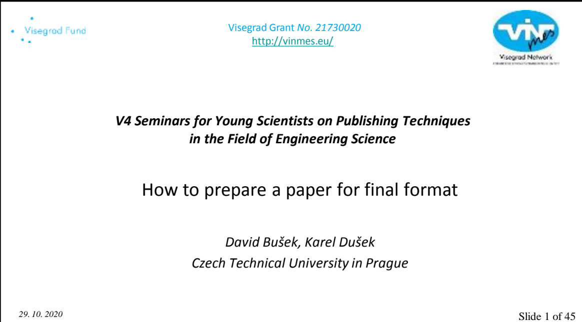

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Journals article formatting

A first, the scientific format may **seem confusing** for the young scientist as every journal has its own requirements

Misunderstanding? → Look out for others, how they do it!

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2

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Before submission

- Do a proper research (sufficient data)
- Find the right journal for your research
  - read (there) articles covering similar topics
- Read the author instructions and format your article according to specific journal requirements (not always strictly necessary)

"I already wrote the paper. That's why it's so hard to get the right data."

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3

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Why is manuscript formatting important?

As an editor, I can tell you that queries and manuscript submissions (unfortunately) come in all shapes, sizes, fonts and (I'm not making this up) colors, making it a pain to sift through them. Sometimes the manuscript formatting has been so jarring that I've had to reject them without even looking at the overall idea—mainly because I couldn't find the pitch through the clutter. Editors generally prefer submissions of any kind to be neat and uniform, like an online contacts folder, so they can find exactly what they want as easily as possible.

- Time to publication may be shortened with correct formatting
- Manuscripts that do not meet journal formatting requirements (title page information, abstract structure, reference style) **are often sent back to the author without review, <u>up to several weeks</u> after the manuscript was first submitted**.

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Requirement for formats of article journals

- Each academic journal has a specific requirement and its own style of formatting:
  - **Title** (various capitalization methods)
  - **Authors** (abbreviating)
  - **texts**
  - **figures** (and their referencing)
  - **tables** (and their referencing)
  - **references**

"You should spend the next week typing down names of all co-authors on your paper."

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5

Journal formatting requirements

- The requirements for how the manuscript should be formatted for the review process may be different from the format of published articles.

Manuscript Published paper

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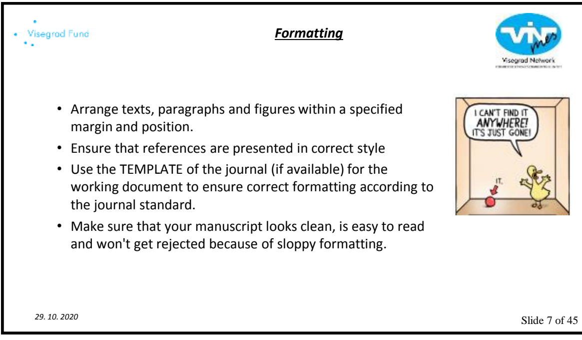

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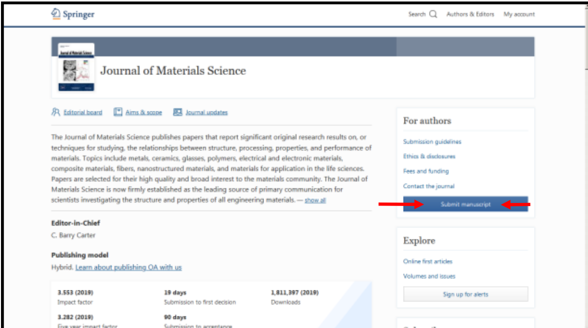

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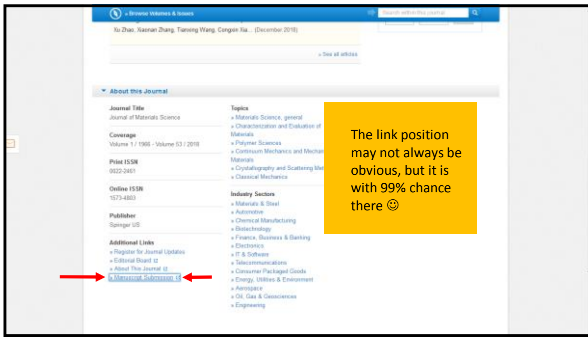

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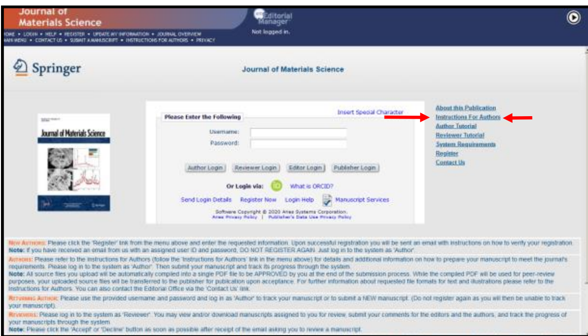

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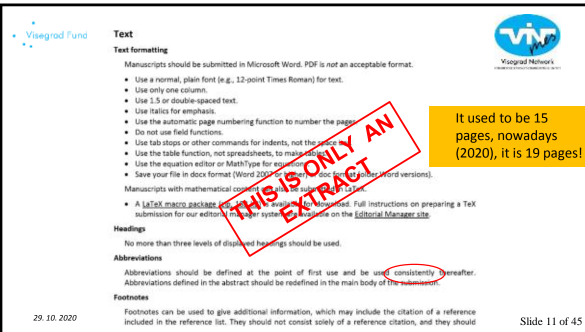

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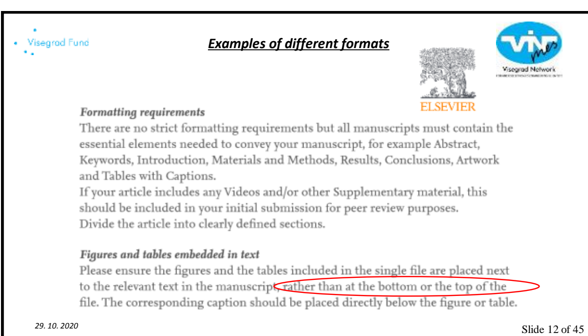

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Unknown formatting / Free format submission

The journal guidelines don't include any instructions regarding font, line spacing, margins, or other layout issues. How should I format the text of my paper?

- **Consistency and simplicity are essential**. The font should be easy to read, and the layout should be consistent throughout the paper. Times New Roman size 12 font, double line spacing, 1-inch margins, and half-inch indentations at the beginning of each paragraph (using the tab key, **not the space bar**) are widely accepted standards.

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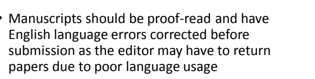
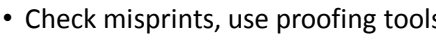
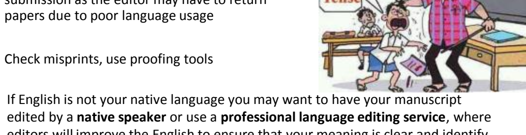
Language control



- Manuscripts should be proof-read and have English language errors corrected before submission as the editor may have to return papers due to poor language usage



- Check misprints, use proofing tools



- If English is not your native language you may want to have your manuscript edited by a **native speaker** or use a **professional language editing service**, where editors will improve the English to ensure that your meaning is clear and identify problems that require your review.
- **YOU ARE THE LAST READER!**

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Editing service

- **Standard Editing** is a full check of the language, grammar, and sentence structure, as well as a check for correct and natural word usage. (Use this service if you are confident about the structure of your manuscript and are looking for a language and grammar check.)

  (price per word around $0.05)

- **Expert Editing** is an in-depth edit that improves the structure and flow of your manuscript and ensures the language is of publication quality. (Use this service if your manuscript needs in-depth editing and you would like to receive suggestions about how to improve your manuscript.)

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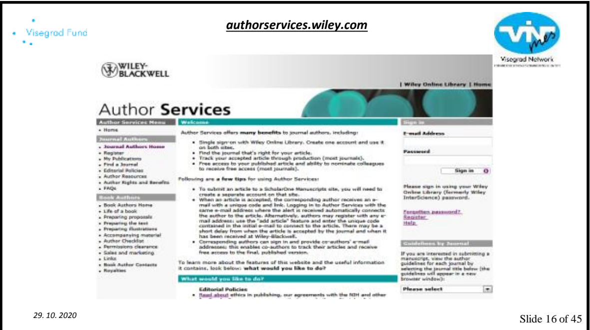

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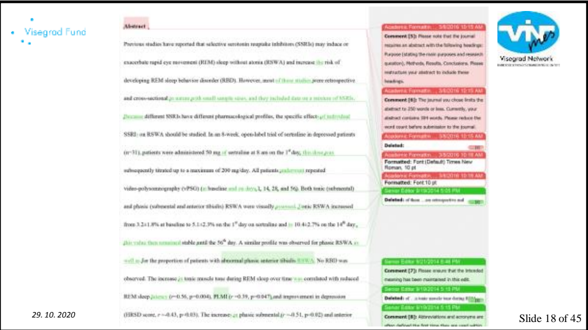

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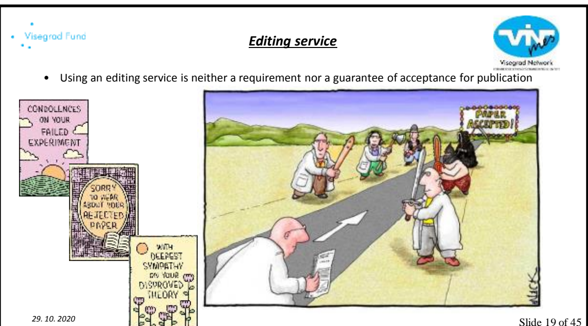

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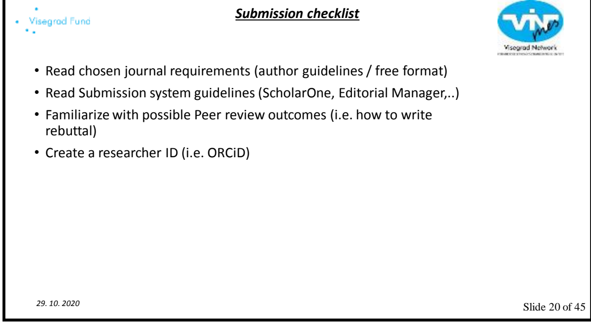

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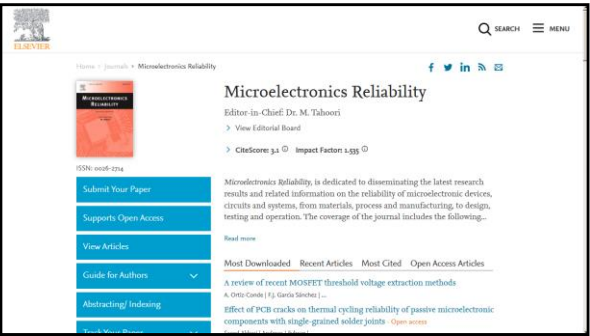

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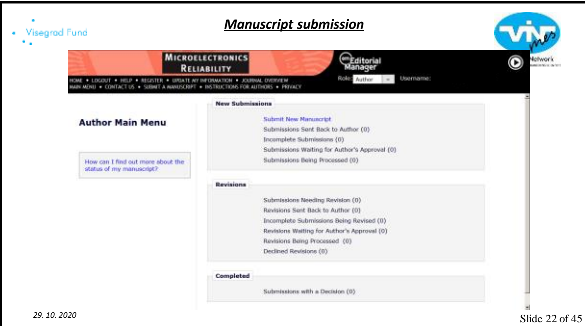

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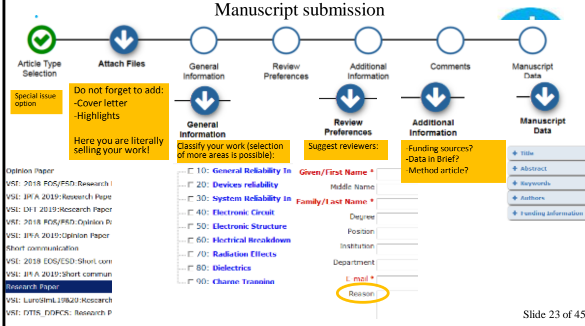

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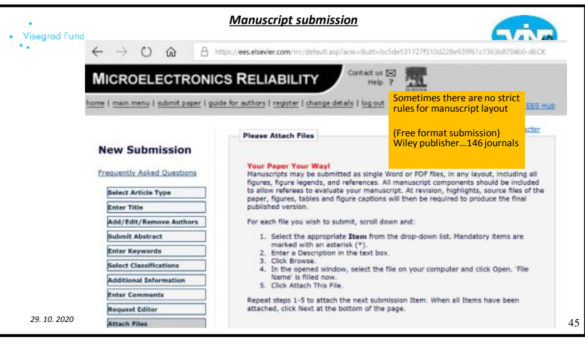

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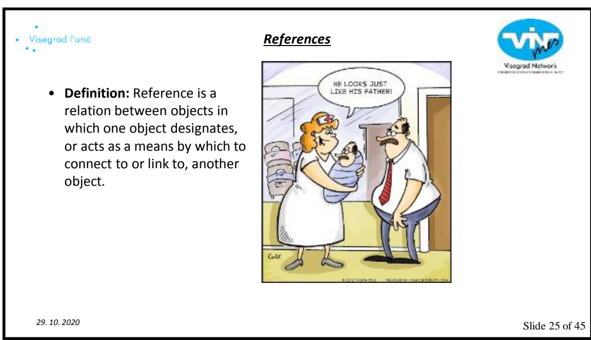

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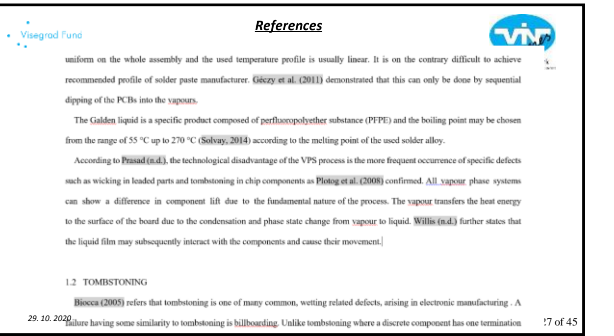

uniform on the whole assembly and the used temperature profile is usually linear. It is on the contrary difficult to achieve recommended profile of solder paste manufacturer. Géczy et al. (2011) demonstrated that this can only be done by sequential dipping of the PCBs into the vapours.

The Galden liquid is a specific product composed of perfluoropolyether substance (PFPE) and the boiling point may be chosen from the range of 55 °C up to 270 °C (Solvay, 2014) according to the melting point of the used solder alloy.

According to Prasad (n.d.), the technological disadvantage of the VPS process is the more frequent occurrence of specific defects such as wicking in leaded parts and tombstoning in chip components as Plotog et al. (2008) confirmed. All vapour phase systems can show a difference in component lift due to the fundamental nature of the process. The vapour transfers the heat energy to the surface of the board due to the condensation and phase state change from vapour to liquid. Willis (n.d.) further states that the liquid film may subsequently interact with the components and cause their movement.

1.2 TOMBSTONING

Biocca (2005) refers that tombstoning is one of many common, wetting related defects, arising in electronic manufacturing . A failure having some similarity to tombstoning is billboarding. Unlike tombstoning where a discrete component has one termination

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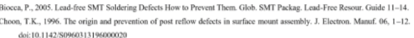

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28

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for macrovoid was set out to 100 μm. Macrovoids are considered as process-dependent-voids as they originate during the manufacturing process. The factors that have impact on voids are shown in Fishbone diagram, see Fig. 2.

1.4. Soldering process, void formation

Volatile compounds from the paste are evaporated and the solder paste melts during the soldering process. The evaporation takes place throughout the volume of the paste, not just on the surface. Gaseous components tend to leave the molten solder alloy but some of them remain trapped inside and create voids. The void formation principle is depicted in Fig. 3.

At first, solvents start evaporating due to temperature elevation. The solder paste is then heated to a temperature in which the flux is activated. The flux subsequently removes oxides from the surfaces to be joined and from the solder particles. The more oxides exist on the metallization and solder particles, the longer the outgassing takes and the more voids will remain entrapped in the joint at the end. Therefore it is necessary to give the flux enough time to remove the oxides. The outgassing may come not just as a result of oxides reduction but also as a result of evaporation of moisture or process chemicals trapped within PCB.

The use of inert atmosphere changes the surface tension of the molten solder [11] and therefore the ability of the cavity to leave through the surface of the molten alloy is influenced. The lead-free solder alloys have higher surface tension in comparison to tin-lead solders [12–14], therefore the cavities do not leave the melted joint easily and the probability of voids occurrence is higher.

used as a reflow parameter for solder pastes. The heating factor is from the perspective of reliability an ideal parameter for reflow profile optimization [15]. Study carried out by Hirman et al. [16] states that heating factor influences the intermetallic thickness. According to studies [17,18] there is no need to pay particular attention to the shape of a reflow profile if the heating factor is according to recommendation and dwell time, reflow peak temperature change and other parameters are within a usual range.

1.5. Reliability concerns and voiding

Most studies on joint-void topic are dealing with the voids as a soldering reliability problem. The Kirkendall voids cause according to a study by Goyal, D. et al. [19] an increase in brittleness of the joint. M. Yunus et al. [20] conclude that large voids, irrespectively of their location, significantly reduce joint life and crack propagation is accelerated with the presence of small voids on component side. Chiu, T. C. et al. [21] proved that there is a very strong correlation between drop reliability and voiding. Previti, M.A. et al. [22] and several other studies [23–25] are therefore focused on minimizing the void presence.

Contrary, opinions from soldering companies [26,27] are that small and uniformly dispersed macrovoids are a necessary and required component of the joint. The issue as to whether and how voids affect the reliability of solder joints is still under discussion, voids may act as stress relievers and crack arresters; equally they can be stress raisers. They can be located anywhere in the soldered joint volume and their location has higher influence on the reliability than their size [9]. Macrovoids uniformly dispersed in the joint volume may increase the reliability of the joint, but their presence on the material boundary is always undesirable as the probability of the mechanical disintegration is increased.

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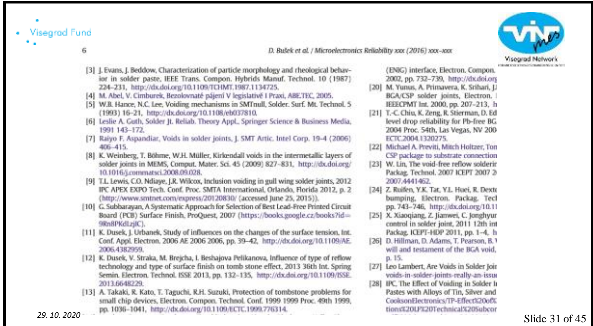

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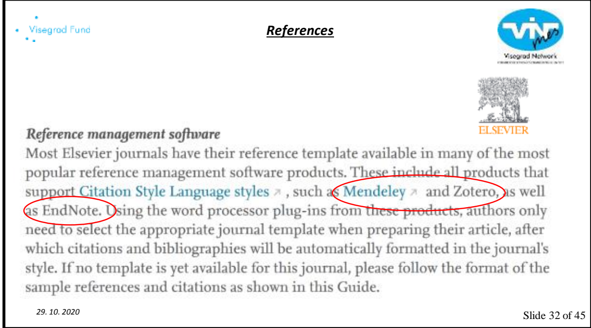

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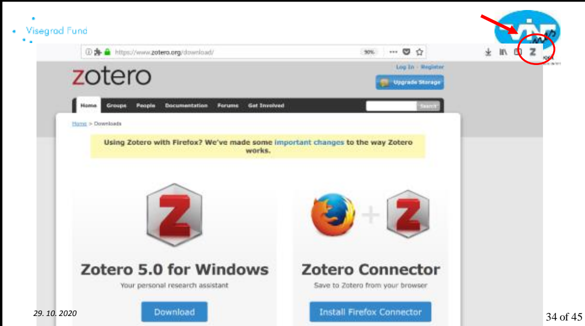

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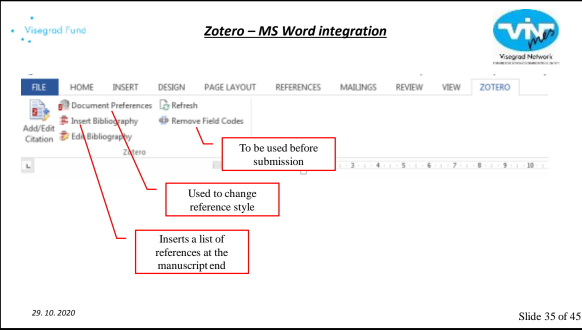

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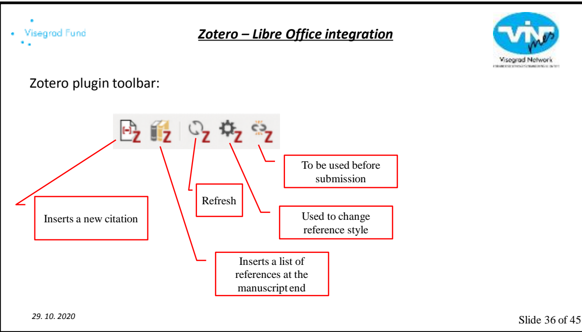

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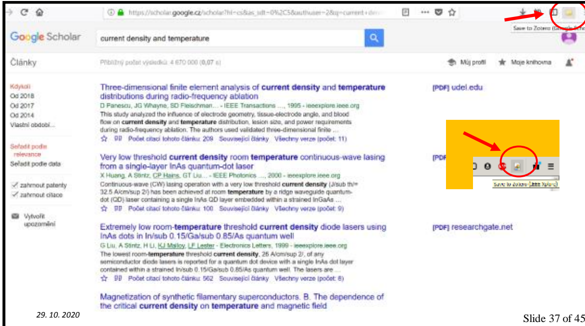

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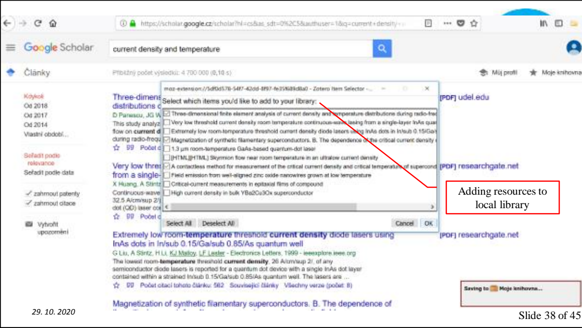

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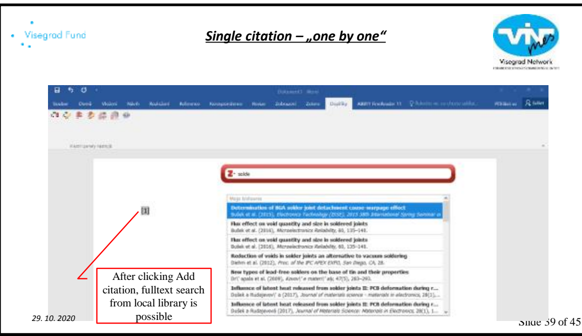

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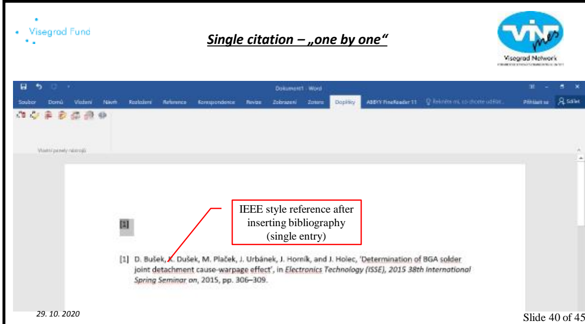

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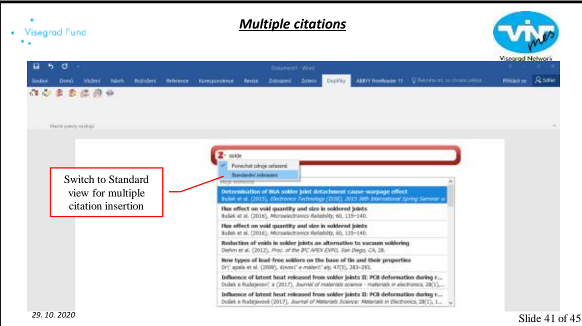

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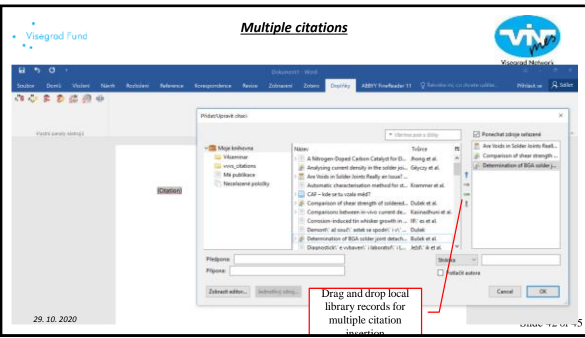

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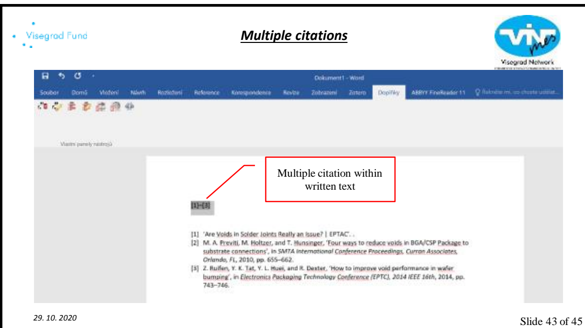

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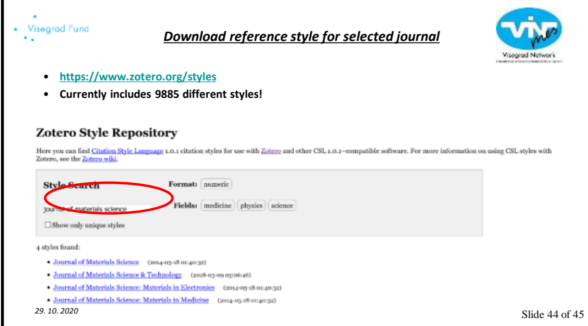

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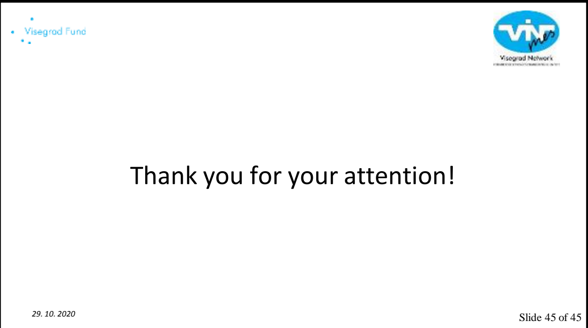

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