Katarina Krapež

ZAGOTAVLJANJE KAKOVOSTI V ZNANOSTI – PRIMER PROSTO DOSTOPNIH ZNANSTVENIH REVIJ

Razvoj novih tehnologij je vzbudil upanje, da bodo rezultati znanstvenih raziskav v digitalni dobi enostavneje in ceneje dostopni. A v procesu prilagoditve zakonodaje za digitalno okolje je bil utrjen zlasti položaj imetnikov pravic (založnikov revij). Posledično so se v zadnjem dvajsetletju cene naročnin na znanstvene revije bistveno povečale, celo do te mere, da danes knjižnjice zmanjšujejo obseg dostopnega gradiva.

Kot odgovor na konvencionalne znanstvene založniške sisteme, katerih poslovni model ni naravnan v korist avtorja v znanosti, se je razvil odprti model dostopa do znanstvene periodike. Plačilo založniške obdelave članka se v tem modelu zaračuna avtorju, dostop do članka pa je za uporabnike brezplačen. Ta model so nekateri založniki izkoristili, in sicer tako, da so omogočili objavo večjega števila nekakovostnih člankov z namenom, da zaslužijo s pristojbinami. Pojav plenilskih založnikov je sprožil vrsto pomislekov o kakovosti člankov v revijah z odprtim dostopom.

V raziskavi, v kateri je sodelovalo 258 urednikov konvencionalnih (zaprtih), odprtih in hibridnih znanstvenih revij iz 42 držav, smo preučevali, do kolikšne mere so ti pomisleki utemeljeni. Rezultati raziskave podajajo poglobljen vpogled v sodobne načine zagotavljanja in evalvacije kakovosti v znanstvenih revijah.

QUALITY ASSURANCE IN SCIENCE – THE CASE OF OPEN ACCESS JOURNALS

The emergence of new technologies gave reasons for the hope that in the digital society results of scientific research could become more easily and cheaply available. However, by adaptation of the legislation to the digital environment, the rights holders (scientific publishers) gained significant advantage over interests of wider scientific community to secure the access to information. Consequently, in the last twenty years, journal prices exponentially increased, even to the point that today libraries are forced to reduce the volume of available material.

A development of an open access (OA) journals in the new millennium was a response to a conventional scientific publishing system, whose business model was not geared to a benefit of the scientific community. In the OA model, an author pays article processing charges (APC) to a publisher, while the access to the article is free for users. Some publishers abused the OA model in such a way that they allowed the publication of a large number of low-quality articles in order to profit from APC. The emergence of predatory publishers raised a number of concerns about the quality of articles published in open access journals.

We studied whether these concerns are justified. 258 editors of closed, hybrid and OA journals from 42 countries took a part in the survey. Results of the study provide a comprehensive insight into modern methods of quality assurance and quality evaluation of scientific articles.

Kristjan Krebelj

NUMERIČNO NAPOVEDOVANJE OBLIKE BRIZGANIH PLASTIČNIH IZDELKOV PO ZAHTEVNEM IZMETAVANJU

Ena od vodilnih tehnologij za proizvodnjo izdelkov iz termoplastov je tehnologija brizganja (litja). Izdelava orodja (kalupa) predstavlja velik začetni strošek in s tem tudi ekonomsko tveganje. Z uporabo računalniških programskih paketov je mogoče razmeroma uspešno razreševati problematiko zapolnjevanja kalupne votline, niso pa namenjeni modeliranju mehanskih razmer v fazah ohlajanja in izmetavanja, ko lahko pride na izdelku do trajne deformacije. Orodja, pri katerih obstaja takšno tveganje, se zato konstruirajo izkustveno in s pomočjo prototipnih orodij.

Cilj doktorske naloge je matematični popis fizikalnega dogajanja, razvoj numeričnega modela in na njem zasnovane računalniške simulacije tehnološkega procesa. Namen je pridobiti vpogled v termične in mehanske razmere med ohlajanjem in izmetavanjem izdelka. Potrebno je izbrati ustrezne materialne modele, ki bodo zadovoljivo popisali fizikalno obnašanje taline in trdnine. Ugotoviti je treba vplivnost materialnih in procesnih parametrov ter izvedljivost računalniške simulacije. Tako bo postavljena osnova za ugotavljanje izvedljivosti izdelave izdelka, optimizacijo njegove oblike in trajanja izdelovalnega cikla. S pomočjo eksperimentov bo preverjena verodostojnost rezultatov računalniških simulacij.

NUMERICAL PREDICTION OF INJECTION MOLDED PLASTIC PRODUCTS' SHAPE AT ADVANCED EJECTION

Injection molding (casting) is one of the leading technologies for manufacturing of thermoplastic products. Producing the mold (die) presents a significant investment and therefore an economic risk. The problematics of mold filling can be relatively successfully resolved with the use of various software packages, but these are not designed to model the mechanical phenomena during the cooling and ejection, when permanent product deformation may develop. Molds, where such risks exist, are designed through trial and error and by making use of a prototype mold.

The goal of the doctoral work is to mathematically describe the physical conditions, formulate a numerical model and perform numerical simulations. Insight into the thermo-mechanical state evolution is to be attained for the cooling and ejection stages. Proper material models need to be selected to adequately describe the melt and solid physical behavior. Influence of the material and process parameters has to be evaluated and the computer simulation feasibility determined. This sets the foundation for product manufacturability prediction, optimization of its shape and the production cycle duration. The trustworthiness of the results of the numerical simulations will be verified through experiments.

Vid Puž

PROUČEVANJE MAKROMOLEKULARNIH STRUKTUR MIŠIČNEGA TKIVA

Vse funkcije v telesu, ki vključujejo gibanje potrebujejo mišično dejavnost. Nekatere od teh so na primer hoja, dihanje, krčenje srčne mišice in druge. Za poznavanje delovanja in funkcij mišic v človeškem telesu je potrebno poznavanje njihove strukture na molekularnem nivoju. Poleg tega so fundamentalne raziskave pomembne pri razlagi patogenosti različnih mutiranih oblik mišičnih proteinov, udeleženih pri boleznih mišic in srčnih obolenj.

V raziskovalni skupini pod vodstvom prof. dr. Kristine Djinović-Carugo se ukvarjamo s proučevanjem mišičnih proteinov, njihovih strukturnih značilnostih in interakcijskih lastnosti, ki odražajo njihovo funkcijo. V predavanju bodo predstavljene ključne komponente mišičnega tkiva in “lego pristop” pri raziskovanju makromolekularnih struktur mišice.

EXPLORING MACROMOLECULAR STRUCTURES OF MUSCLE TISSUE

All functions in human body that include movement, such as walking, breathing, heart beating and other, require muscular activity. In order to reveal action and function of muscles, its detailed structure at the molecular level is needed. In addition, fundamental research studies are important to assess pathogenesis of the various muscle proteins, involved in plethora of muscle and heart diseases.

In the research group led by prof. dr. Kristina Djinović-Carugo, we are studying structural and interaction properties of muscle proteins that reflect their function. Presentation will cover key components of muscle tissue and “lego approach” used in exploration of its macromolecular structures.