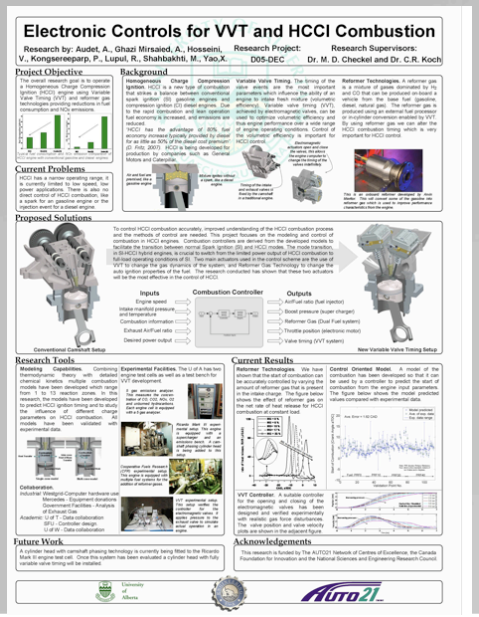
Converting Conference Presentations and Seminar Papers to Journal Articles

Roger Graves, Director, Writing Across the Curriculum, University of Alberta



Electronic Controls for VVT and HCCI Combustion

Research by: Audet, A., Ghazi Mirsaied, A., Hosseini, V., Kongsereeparp, P., Lupul, R., Shahbakhti, M., Yao,X.

Research Project: D05-DEC

Research Supervisors: Dr. M. D. Checkel and Dr. C.R. Koch

Project Objective

Background

Current Problems

Proposed Solutions

Research Tools

Current Results

Future Work

Acknowledgements

Waste Management 29 (2009) 329–334

Contents lists available at ScienceDirect

Waste Management

journal homepage: www.elsevier.com/locate/wasman

Matt waste from glass separated collection: An eco-sustainable addition for new building materials

M.C. Bignozzi *, A. Saccani, F. Sandrolini

Dipartimento Chimica Applicata e Scienza dei Materiali, University of Bologna, Via Risorgimento 2, 40136 Bologna, Italy

ARTICLE INFO

Article history:
Accepted 8 February 2008
Available online 8 May 2008

ABSTRACT

Matt waste (MW), a by-product of purification processes of cullet derived from separated glass waste collection, has been studied as filler for self-compacting concrete and as an addition for newly blended cement. Properties of self-compacting concrete compared to reference samples are reported. They include characteristics at the fresh and hardened states, and the compressive strength and porosity of mortar samples that were formulated with increasing amounts of MW to be used as cement replacement (up to 50 wt.%). The effects of matt waste are discussed with respect to the mechanical and microstructural characteristics of the resulting new materials.

© 2008 Elsevier Ltd. All rights reserved.

1. Introduction

tures. There are many challenges in glass recycling. Most importantly, glass waste needs to be separated from plastic, paper and

Roger Graves

http://www.ualberta.ca/~graves1/index.html

Genre as social action

- S. Miller (1984) described genre as a rhetorical action that recurs within a social setting
- The sharing of meaning is intersubjective and negotiated through discourse among the group—again, perhaps FEC meetings to rank professors might be a useful example; journal article reviewers perform a similar function through their reviews of manuscripts
- These shared discourses form into typical types of documents (genres)

Discourse communities

- Swales (1991) developed the concept of discourse communities to explain the purposes within documents
- His concept of rhetorical "moves" within documents—such as "establish a research territory"—leads to one method for establishing the typical purposes or communicative aims for a document
- Manuscript reviewers for journals form into discourse communities for example

Genre sets

- Genres typically do not occur alone but instead as part of a set of social actions within a group
- The research article is one of a set of genres: a poster, a chapter in a dissertation, a research grant, research grant reports, peer review documents

From Poster to Article

- Explico: to unfold, unroll, explain
- IMRAD: these are the sections of the article
- Expand the parallel sections from your poster into paragraphs

http://www.latinwordlist.com/latin-words/explico-10174089.htm

Introduction

Introduction:

What is a continuous fi e composite?
A fibre composite is a aterial made by combining a fibre substrate wit a matrix resin.

Continuous fibre composites are an engineering material that show growing usage in modern engineering. The combinationof strong material properties and light weight has been a route cause of this. As we learn more about the properties of composites we can expand the range of their uses.

The material properties which were studied were Young's modulus and Ultimate Tensile Strength. Young's Modulus is defined as: $E=\sigma/\epsilon$ where σ is stress and ϵ is strain. Furthermore, stress is defined as: $\sigma=F/A$, where F is force and A is cross sectional area. Strain is defined as $\epsilon=\Delta l/l$, where l is length. Ultimate Tensile strength is defined as the stress a specimen can maintains at the time of failure.

A major aspect of research has been testing the material properties of flax fibre composites and comparing the results.

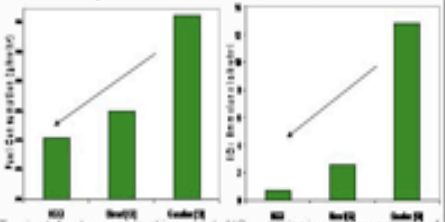
1. Introduction

The use of concrete and self-compacting concrete (SCC) as a tool for effective recycling has been actively researched for the last few years. Examples of these efforts include materials derived from buildings following demolition (Diotallevi et al., 2004; Limbachiya and Roberts, 2004), scrap and ground used tires (Bignozzi and Sandrolini, 2006; Hernandez-Olivares et al., 2002; Khatib and Bayomy, 1999), waste glass (mainly binary soda-lime glass) (Bignozzi and Sandrolini, 2004; Shao et al., 2000) and residues from ceramic raw materials (Bignozzi et al., 2004). These materials were successfully used as a partial or complete replacement for natural aggregates and/or fillers. These studies have environmentally friendly consequences, such as safeguarding of non-renewable raw materials, reducing the exploitation of quarries and reducing landfill disposal, all of which result in the creation of new conglomerates with peculiar characteristics. For example, the introduction of tire rubber into a concrete mix generally leads to lighter and somewhat tougher material (Bignozzi and Sandrolini, 2006; Khatib and Bayomy, 1999). More recently, self-compacting technology has enabled the significant improvement of the mechanical strength of rubberised concrete (Bignozzi and Sandrolini, 2006). In addition, when glass waste (average grain size $\leqslant 38$ μm) is added to a concrete mixture, the material may exhibit pozzolanic properties (Bignozzi and Sandrolini, 2004; Shao et al., 2000).

http://www.mcgill.ca/files/engineering/SURE2009_MECHANICAL_KGoyette.pdf

Project Objective

The overall research goal is to operate a Homogeneous Charge Compression Ignition (HCCI) engine using Variable Valve Timing (VVT) and reformer gas technologies providing reductions in fuel consumption and NOx emissions.



Typical fuel consumption and NOx emission comparison of HCCI engine with conventional gasoline and diesel engines.

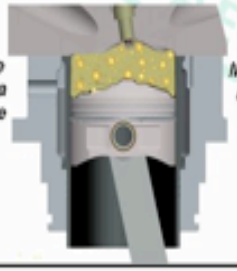
Current Problems

HCCI has a narrow operating range, it is currently limited to low speed, low power applications. There is also no direct control of HCCI combustion, like a spark for an gasoline engine or the injection event for a diesel engine.

Background

Homogeneous Charge Compression Ignition. HCCI is a new type of combustion that strikes a balance between conventional spark ignition (SI) gasoline engines and compression ignition (CI) diesel engines. Due to the rapid combustion and lean operation fuel economy is increased, and emissions are reduced.

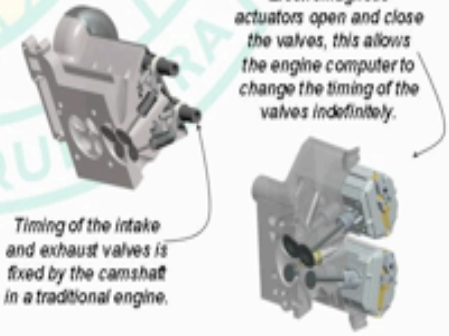
"HCCI has the advantage of 80% fuel economy increase typically provided by diesel for as little as 50% of the diesel cost premium" (D. Fritz, 2007). HCCI is being developed for production by companies such as General Motors and Caterpillar.



Air and fuel are premixed, like a gasoline engine

Mixture ignites without a spark, like a diesel engine.

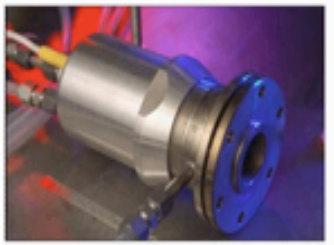
Variable Valve Timing. The timing of the valve events are the most important parameters which influence the ability of an engine to intake fresh mixture (volumetric efficiency). Variable valve timing (VVT), achieved by electromagnetic valves, can be used to optimize volumetric efficiency and thus engine performance over a wide range of engine operating conditions. Control of the volumetric efficiency is important for HCCI control.



Timing of the intake and exhaust valves is fixed by the camshaft in a traditional engine.

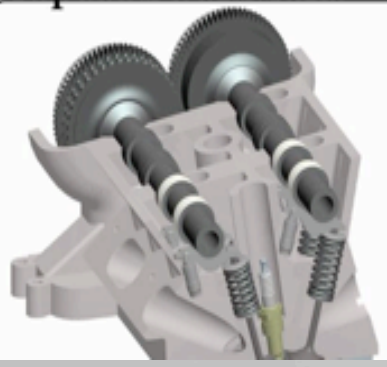
Electromagnetic actuators open and close the valves, this allows the engine computer to change the timing of the valves indefinitely.

Reformer Technologies. A reformer gas is a mixture of gases dominated by H_2 and CO that can be produced on-board a vehicle from the base fuel (gasoline, diesel, natural gas). The reformer gas is produced using an external fuel processor or in-cylinder conversion enabled by VVT. By using reformer gas we can alter the HCCI combustion timing which is very important for HCCI control.



This is an onboard reformer developed by Arvin Meritor. This will convert some of the gasoline into reformer gas which is used to improve performance characteristics from the engine.

Proposed Solutions



To control HCCI combustion accurately, improved understanding of the HCCI combustion process and the methods of control are needed. This project focuses on the modeling and control of combustion in HCCI engines. Combustion controllers are derived from the developed models to facilitate the transition between normal Spark Ignition (SI) and HCCI modes. The mode transition, in SI-HCCI hybrid engines, is crucial to switch from the limited power output of HCCI combustion to full-load operating conditions of SI. Two main actuators used in the control scheme are the use of VVT to change the gas dynamics of the system, and Reformer Gas Technology to change the auto ignition properties of the fuel. The research conducted has shown that these two actuators will be the most effective in the control of HCCI.

http://www.mece.ualberta.ca/groups/combustion/wall%20posters%20pdf/auto21_2007.jpg

Introduction:

What is a continuous fibre composite?
A fibre composite is a material made by combining a fibre substrate with a matrix resin.

Continuous fibre composites are an engineering material that show growing usage in modern engineering. The combinationof strong material properties and light weight has been a route cause of this. As we learn more about the properties of composites we can expand the range of their uses.

The material properties which were studied were Young's modulus and Ultimate Tensile Strength. Young's Modulus is defined as: $E=\sigma/\epsilon$ where σ is stress and ϵ is strain. Furthermore, stress is defined as: $\sigma=F/A$, where F is force and A is cross sectional area. Strain is defined as $\epsilon=\Delta l/l$, where l is length. Ultimate Tensile strength is defined as the stress a specimen can maintains at the time of failure.

A major aspect of research has been testing the material properties of flax fibre composites and comparing the results.

Introduction

The manufacture of Metered-Dose Inhalers (MDIs) is often difficult because of problems associated with creating and maintaining a homogeneous suspension, differential partitioning of actives and loss of active onto surfaces of the filling equipment.

The manufacture of combination products can be further complicated by differing physical characteristics of the drug crystals, such as density, solubility, surface energy, particle size and because actives can be present at very different strengths.

In addition, the development of a manufacturing process also requires scale-up from laboratory to commercial filling equipment which includes changes in the drug addition vessel, pressure vessel, stirrers and recirculation rates.

Pearl Therapeutics' cosuspension formulation allows for the rapid development of MDIs using spray-dried microparticles which are blended with micronized drug substance(s) in HFA-134a. The characteristics of this formulation technology that allow for rapid development of high performance MDIs are also evident in the manufacture of MDIs This poster presents the advantages of the cosuspension formulation for development and scale-up of MDI manufacturing processes for a variety of products, including single-component and combination MDIs.

Solution

http://www.ualberta.ca/~vehring/PE%20Page/Conference%20Files/RDD%202011%20poster%20Performance%20Advantages%20of%20Pearl%20Cosuspension%20Formulation%20Technology%20for%20Manufacturing%20of%20Metered-Dose%20Inhalers.pdf

INTRODUCTION

Experiments on single suspended droplets have indicated that high temperatures in the liquid phase can occur during droplet drying in a hot gas stream[1]. It has been suggested that droplets heat up to similarly high temperatures during spray drying processes with a potentially detrimental effect on heat sensitive active pharmaceutical ingredients.

Studies on the evaporation behavior of solution droplets have so far been restricted to conditions that are atypical of the spray drying of powders intended for pulmonary delivery. The resulting dry particles were orders of magnitude larger than respirable particles.

The methods presented here allow measurement of the evaporation process under realistic conditions. The apparatus produces model particles with a similar morphology and size to those found in the actual dry powder product.

http://www.ualberta.ca/~vehring/PE%20Page/Conference%20Files/AAPS%202003a%2
poster%20Novel%20Experimental%20
Method%20Indicates%20Proteins%20and%20Peptides%20Are%20
Protected%20from%20High%20Gas%20Temperatures%20During%20Spray%20Drying.pd

1. Introduction

The use of concrete and self-compacting concrete (SCC) as a tool for effective recycling has been actively researched for the last few years. Examples of these efforts include materials derived from buildings following demolition (Diotallevi et al., 2004; Limbachiya and Roberts, 2004), scrap and ground used tires (Bignozzi and Sandrolini, 2006; Hernandez-Olivares et al., 2002; Khatib and Bayomy, 1999), waste glass (mainly binary soda-lime glass) (Bignozzi and Sandrolini, 2004; Shao et al., 2000) and residues from ceramic raw materials (Bignozzi et al., 2004). These materials were successfully used as a partial or complete replacement for natural aggregates and/or fillers. These studies have environmentally friendly consequences, such as safeguarding of non-renewable raw materials, reducing the exploitation of quarries and reducing landfill disposal, all of which result in the creation of new conglomerates with peculiar characteristics. For example, the introduction of tire rubber into a concrete mix generally leads to lighter and somewhat tougher material (Bignozzi and Sandrolini, 2006; Khatib and Bayomy, 1999). More recently, self-compacting technology has enabled the significant improvement of the mechanical strength of rubberised concrete (Bignozzi and Sandrolini, 2006). In addition, when glass waste (average grain size $\leqslant 38$ μm) is added to a concrete mixture, the material may exhibit pozzolanic properties (Bignozzi and Sandrolini, 2004; Shao et al., 2000).

* What needs to be added to make the poster introduction into an article introduction?

* What needs to be added to your poster introduction to make it into a journal article introduction?

Gap

- Establishes that a problem exists
- Provides motivation for the proposed study by implying the gap needs to be filled

Pointing out a gap in literature

"Particularly worrisome has been the increase in adolescent gang membership. A subset of the offending population, estimated at 68% of institutionalized youth, are affiliated with a gang, yet **little research has been done to distinguish gang members from other types of young offenders** (Kratcoski &Kratcoski, 1996); Richter-White, 2003). It may be that young people are turning to gangs for protection from other gangs, as a way to gain respect, to escape from troubled homes, because their friends are doing it, peer pressure, or as a way to earn a living through drug trafficking, illegal weapons sales, robbery, and theft (Lloyd, 2002). However, the **reasons why** adolescents choose to join a gang **remain understudied** with **no clear answers**.

–Nicole Kostiuk, *Attachment in Incarcerated Adolescent Gang Members*, 2007.

The problem: waste

- Additionally, the various purification treatments involved in the separation process produce waste in turn. This waste includes ceramic residues and colored glass fragments that are usually separated from the glass cullet by optoelectronic equipment. This fraction of colored glass is usually sent to a landfill, except in the North of Italy where it is further treated by purification processes.

The solution: recycle

* The objective of this paper is to investigate a new application of matt waste in the construction industry by exploiting its activity as filler for self-compacting concrete and as a partial Portland cement replacement (up to 50%) for newly blended cement.

What is your problem? Your solution?

* What is the objective of your paper?
* State it in one sentence.

Writing Requirements across Nursing Programs in Canada

While research over the past decade or two has given us glimpses of the set of writing assignments in particular nursing programs (e.g., Giminez, 2008, 2010; Lashley & Wittstadt, 1993; Rooda & Nardi, 1999; Zygmont & Schaefer, 2006), no studies to date have provided a complete picture of the extent to which nursing programs rely on English courses, general composition /academic writing courses, or discipline-specific courses on writing in nursing to help their students become proficient writers in their discipline. Whether academic writing genres should be taught within discipline-based courses or within composition courses (or perhaps not at all) remains a theoretical and practical issue (Bazerman et al., 2005; Brooks, 2002), one of particular concern for those who determine curricula for professional programs. At the heart of the debate, as Bazerman et al. (2005) point out, lie conflicting notions about "the degree to which academic writing is the same or different across disciplinary settings" (p. 85) and, consequently, about the degree to which a general composition course—primarily a U.S. phenomenon—may serve as a useful springboard into academic writing within a discipline or profession. In Canada, writing courses remain the exception rather than the rule.

This paper reviews the English, writing, and communication course requirements in English-language nursing programs across Canada and discusses the relative merits of various approaches, including the benefits of discipline-specific courses in writing targeted at nursing students. We begin, however, by briefly reviewing research on writing instruction in nursing and by considering three key developments that have combined to raise the profile of academic writing and research in the professional discipline of nursing.

Ignition Mechanism of n-Heptane/Air Mixtures in an HCCI Combustion Engine

P Kongsereeparp and MD Checkel, the University of Alberta

INTRODUCTION

Homogeneous Charge Compression Ignition (HCCI) combustion engines have recently gained attention from automotive researchers because of the potential for high efficiency with low NO_x emissions [1,2]. Unfortunately, they suffer from a narrow operating range because they lack a means to control combustion timing. Ignition is governed by the mixture temperature history during compression and the auto-ignition chemistry of the fuel/air/residual mixture. This makes the study of ignition mechanisms for such mixtures important because of the potential to lead to improved engine control techniques.

Several publications [3-9] have described the path of heptane/air reaction chemistry, mostly from the point of view of developing efficient chemical kinetic mechanisms. However, the reverse study using a well-defined mechanism to explain the phenomena inside a cylinder is not extensive. This paper examines the auto-ignition process of hydrocarbon fuels such as heptane which exhibit two-stage-auto-ignition. The contributions of the main reactions leading to heat release during the 1st and 2nd stage combustion are described. Additionally, the importance of radical production from the first stage combustion is examined. This study was conducted using an engine model incorporating a single zone chemical-kinetic combustion model which has been proven capable of describing auto-ignition timing in a heptane-fuelled engine.

http://www.mece.ualberta.ca/groups/combustion/papers%20pdf/
Checkel_Paitoon_HeptaneAutoIgnition_final2.pdf

* Despite numerous in vivo (Bennett &Zeman,2005; Giacomelli-Maltoni etal.,1972; Heyder &Rudolf,1977; Heyder et al.,1986; Hounam etal.,1969; Hounam etal.,1971; Keck etal.,2000; Kesavanathan etal.,1998; Kesavanathan &Swift, 1998; Landahl &Black,1947; Landahl &Tracewell,1949; Lippmann, 1970; Pattle, 1961; Rasmussen etal.,1990, 2000; Wiesmiller etal.,2003), in vitro (Dai etal.,2007; Garcia, 2009; Guilmette etal.,1994; Itoh etal.,1985; Kelly etal.,2004; Kelly etal.,2005; Swift, 1991; Swift &Kesavanathan,1996; Yeh etal.,1997; Zwartz &Guilmette,2001), computational fluid dynamics(CFD) (Kimbell, 2006; Liu, Matida,Gu,&Johnson,2007; Liu etal.,2009; Liu etal.,2010; Shi etal.,2007; Wang etal.,2009), and theoretical modeling (Cheng etal.,1991; Scott etal.,1978; Yu etal.,1981) studies on deposition of micrometer-sized particles that give correlations including airway dimensions and flow patterns to predict deposition of micrometer-sized particles in nasal airways of adults, only a few studies have focused on children.

Golshahi, L. Noga M. L., Thompson, R. B., and Finlay W.H. "In vitro deposition measurement of inhaled micrometer-sized particles in nasal airways of children and adolescents during nose breathing", J. Aerosol Sci. 42:447-488, 2011.

Methods: Description, detail, specifics

* How is the methods section of your poster organized?
* What level of description does your poster provide about the methods used?
* Do the authors cite other research articles in this section?
* Can you include tables and graphs in this section to illustrate/provide details about your method?

2. Experimental details

2.1. Materials

Self-compacting concrete samples were prepared using CEM II/A-L 42.5 R (EN 197-1, Italcementi, Monselice (PD) Italy), tap water, alluvial coarse aggregates (4–16 mm) and sand (0–4 mm). Matt waste and calcium carbonate (named C) were alternatively used as fillers.

A representative batch of MW was kindly supplied by Sasil, Gruppo Minerali (Novara, Italy). Its grain size distribution was determined with laser granulometery (Mastersizer, 2000, Malvern Instruments) and is reported in Fig. 1. The average composition of oxide was the following: SiO_2 71 ± 0.7, Na_2O 13.5 ± 1, CaO 10 ± 1, Fe_2O_3 0.3 ± 0.05, Al_2O_3 2 ± 0.2, MgO 1.75 ± 0.75 and K_2O 0.75 ± 0.25 wt%. Based on its source, the MW composition is very similar to that of soda-lime glass. The separated urban glass collection is mainly used for glass bottles and storage jars, although stoneware residues are sometimes accidentally introduced. X-ray diffraction measurements show that the MW structure is fully amorphous.

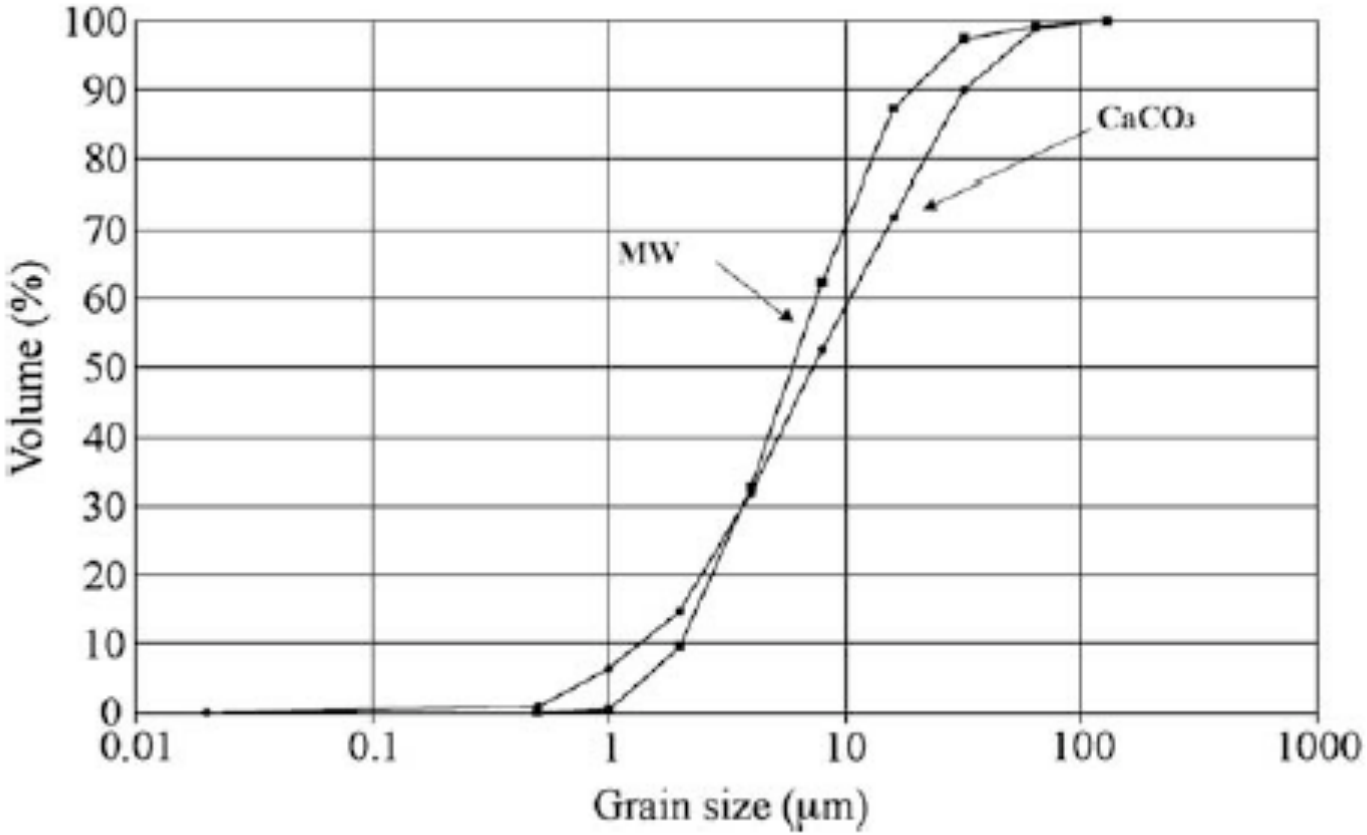


Fig. 1. Grain size distribution of commercial calcium carbonate and matt waste.

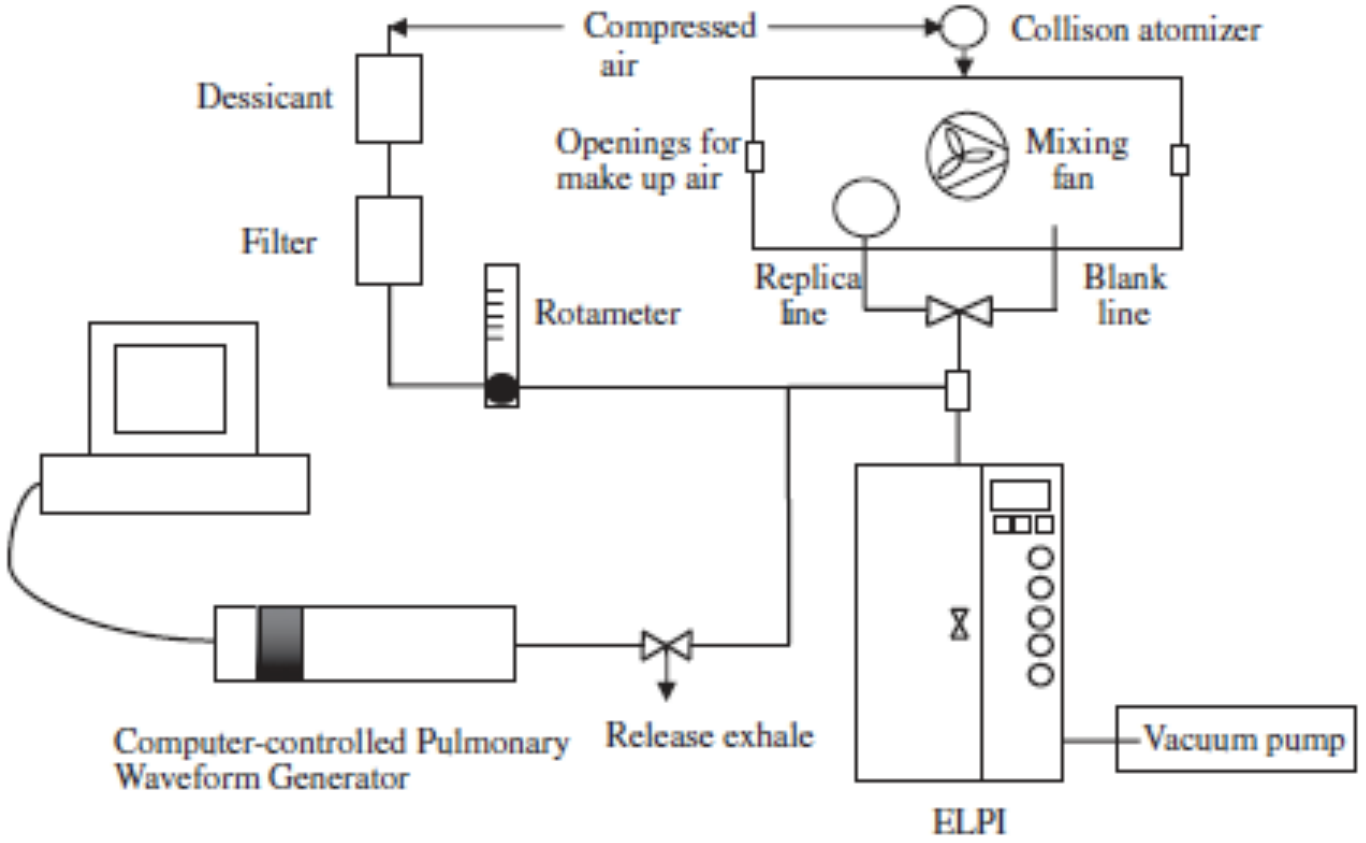


Fig. 2. Schematic diagram of the experimental setup for measuring deposition of particles in nasal airways of adults and children.

Golshahi, L. Noga M. L., Thompson, R. B., and Finlay W.H. "In vitro deposition measurement of inhaled micrometer-sized particles in nasal airways of children and adolescents during nose breathing", J. Aerosol Sci. 42:447-488, 2011.

Results

- On your poster did you present graphs and tables in this section?
- Did you summarize and describe?
- Did you present arguments to explain the data?
- Did you cite other research articles in this section?

3. Results and discussion

Fresh concrete results obtained for SCC-C and SCC-MW are reported in Table 1. The target values were always attained for both the Slump Flow and J-Ring tests. When MW filler was used, no segregation occurred and good cohesiveness was visually assessed. To evaluate concrete viscosity, the time required to reach a 500 mm spread diameter (t_{500}) in the Slump Flow test was recorded. For both the formulations, t_{500} was about 4 s, which is well below the limit value of 12 s reported in the Italian standard (UNI 11041). Good reproducibility of Slump Flow, J-Ring and t_{500} results was observed for SCC-MW, prepared for each investigated hardening time according to the mix design reported in Table 1.

3. Results and discussion

Before we present our data, it is useful to first provide an outline of what follows. We begin by first comparing transnasal pressure drops of our replicas with *in vivo* pressure drop data available for both adults and children, in order to validate the build procedure we followed for making our replicas, since a direct relation between deposition and pressure drop is proposed in an *in vivo* study with adult subjects by Hounam et al. (1971). Next, due to the scarcity of *in vivo* data for children, we will compare deposition in our adult replicas with the *in vivo* data available for adults in order to assure ourselves of the close proximity of our *in vitro* data measurement with the *in vivo* measurements. Furthermore, we will compare the few *in vivo* deposition data points for children, which are available for limited particle sizes with our systematically obtained *in vitro* data with children replicas. Next, we will initially examine the possibility of reducing intersubject variability with the application of dimensional deposition parameters that have previously been proposed by other researchers such as impaction parameter ($d_a^2 Q$) and a deposition parameter that includes transnasal pressure drop ($d_a^2 \Delta p$). Subsequently, we examine possible non-dimensionalized correlations that can be used for predicting deposition of aerosols with different particle sizes inhaled by children during different activity levels in a more general setting. This includes exploration of the applicability of multiple characteristic diameters, on the basis of anatomical dimensions of our replicas, in an equation that includes theoretically relevant non-dimensional numbers such as Reynolds and Stokes numbers. To emphasize that our proposed dimensionless correlation can only be used to predict average amount of particle deposition in an anatomically normal population, we will look at a single anatomically abnormal replica. Finally, we will compare deposition within different age groups (i.e. infants, children, and adults).

3.1. Method validation

3.1.1. Transnasal pressure drop values

The transnasal pressure drop data measured for our adult replicas (i.e. excluding the larynx and the nasopharynx) were compared with *in vivo* and *in vitro* data given in the literature. The transnasal pressure drop for 24 subjects is given in an

To better reduce intersubject variability, it would be interesting to examine whether correlating deposition with a Stokes number calculated using a different optimum characteristic diameter (d_c, specific for each subject) can decrease the scatter of the data separately or in addition to other parameters such as non-dimensional intranasal pressure drop or Reynolds number. Stokes (Stk) and Reynolds (Re) numbers including d_c are defined as follows:

$$\mathrm{Re} = \frac{4\rho_{\mathrm{air}} Q}{\pi \mu d_c} \tag{3}$$

$$\mathrm{Stk} = \frac{\rho_p d_p{}^2 C_{cp} U}{18\mu d_c} = \frac{2\rho_{\mathrm{water}} d_a^2 C_{ca} Q}{9\pi\mu d_c^3} \tag{4}$$

In the above equations ρ_{air} (1.2 kg/m^3) is the density of air; ρ_{water} is the density of water (1000 kg/m^3), which is used with aerodynamic particle size d_a. The average inhaled flow rate (Q) is used in data analyses, which is calculated using tidal volume (V_t) and breathing frequency (f) as follows:

$$Q(l/\mathrm{min}) = 2V_t(l) f(\mathrm{min}^{-1}) \tag{5}$$

Dynamic viscosity (μ) for air is 1.8×10^{-5} (kg/m s). C_c is the Cunningham slip correction factor (C_{cp} for particle diameter d_p and C_{ca} for aerodynamic diameter d_a) whereby C_{ca} is defined as follows:

$$C_{ca} = 1 + 2.52\lambda/d_a \tag{6}$$

and λ is the mean free path of air.

A dimensionless pressure drop parameter can be defined using the Euler number:

$$\mathrm{Eu} = \Delta p/\rho_f U^2 = \pi^2 d_c^4 \Delta p/16\rho_f Q^2 \tag{7}$$

where Δp is the intranasal pressure drop. Various possible characteristic diameters (d_c) are given in Table 3 with their corresponding references if they have been used previously.

Golshahi, L. Noga M. L., Thompson, R. B., and Finlay W.H. "In vitro deposition measurement of inhaled micrometer-sized particles in nasal airways of children and adolescents during nose breathing", J. Aerosol Sci. 42:447-488, 2011.

Discussion

- Do the authors present visual evidence in this section?
- Do the tables and graphs present arguments in favor of how to interpret the data?
- Do you present arguments that tell you how to interpret their results?
- Do you cite other research?

4. Conclusions

Considerable intersubject variability was observed in deposition of micrometer-sized particles in our fourteen children replicas if only impaction parameter is considered when plotting the data. When instead a characteristic diameter in the form of the ratio of surface area to the length of nasal airway is used for calculation of Reynolds and Stokes numbers, the scatter of the data largely collapses. However, since measuring the surface area of the airways *in vivo* requires imaging, it is useful to note that a characteristic diameter including nasal airway volume and length (i.e. $\sqrt{V/L}$), which can be measured by acoustic rhinometry, allows prediction of deposition with good accuracy ($r^2=0.91$) via the following equation:

$$\eta = \left[1-\left(\frac{119.4}{119.4+X}\right)^{0.57}\right]100$$

where $X = \mathrm{Stk}^{1.23}\,\mathrm{Re}^{1.28}$. The average value of the characteristic diameter $\sqrt{V/L}$ used in Stokes and Reynolds for our thirteen healthy subjects is 1.1 ± 0.14 cm. Comparing deposition across different age groups at a constant impaction parameter shows that deposition in infants is higher than in both adults and children, whereas deposition in our children is not significantly different from our five tested adults. The proposed equation can be used for estimating the fraction of nasally inhaled aerosol that reaches the lungs of school aged children and adolescents.

Golshahi, L. Noga M. L., Thompson, R. B., and Finlay W.H. "In vitro deposition measurement of inhaled micrometer-sized particles in nasal airways of children and adolescents during nose breathing", J. Aerosol Sci. 42:447-488, 2011.

References

* How many?
* What kind?