

From: Ian Mills <i.m.mills@reading.ac.uk>

Date: May 1, 2009 10:57:03 AM EDT

To: "Leonard, Brian P" <bpleona@uakron.edu>, IAN MILLS <ian704mills@btinternet.com>

Cc: 'Claudine Thomas' <cthomas@bipm.org>

Subject: Re: Upcoming CCU Meeting Comments

Dear Dr Leonard,

Thank you for your message and attachment. I have read and follow your ideas.

I think a major problem with your suggestion that would make it difficult for many people is that your proposal would mean that the atomic mass of the carbon 12 atom would no longer be exactly 12 Da. (At present the unified atomic mass unit, symbol u, is simply an alternative name for the dalton, symbol Da. I am not sure what you propose for the u.) I think that chemists would not like this change. That is what has lead us to prefer to redefine M_u as (1/12) of the molar mass of carbon 12, accepting that this would no longer be exactly 1 g/mol. We prefer to describe it this way, without introducing the (1+kappa) factor, which is confusing to many people and which we now regret introducing. We feel that chemists will not wish to change the so-called "atomic weights" which everyone is used to, which are actually relative atomic masses relative to carbon 12 as exactly 12. We shall see what the CCU decides to do.

The fact that the base unit of mass includes the prefix "kilo-" causes no problems, and there is a strong feeling that to invent a new name for this unit is an unnecessary complication. I think we can all accomodate this small anomaly.

Your further suggestion to redefine the second as the de Broglie-Compton period of the electron mass is also interesting. It has certainly been thought about and discussed. However the time and frequency community are very strong, and they would never accept a definition of the second of this kind. At present the second is the most precisely realised of all the base units, due to the very high precision of atomic microwave, and now optical, clocks. They will never give up a definition of the second in terms of an atomic clock.

Thank you for your thoughts. Regards, Ian

=====

Ian Mills FRS

Emeritus Professor of Chemistry

President of the CCU

School of Chemistry

University of Reading

RG6 6AD U.K.

email: i.m.mills@reading.ac.uk

phone: +44 (0)118 378 8456

home phone: +44 (0)118 987 2335

mobile: 07770 227678

----- Original Message -----

From: <bpleona@uakron.edu>

To: "IAN MILLS" <ian704mills@btinternet.com>

Cc: "Ian Mills" <i.m.mills@reading.ac.uk>; "Claudine Thomas" <cthomas@bipm.org>

Sent: Thursday, April 30, 2009 12:28 PM

Subject: Upcoming CCU Meeting Comments

Dear Professor Mills:

Thanks for responding to my inquiry forwarded from Dr Thomas. I will try my best with the BIPM information.

I attach some comments for your information.

I hope they are of value.

Yours sincerely,

Dr B P Leonard.

Quoting IAN MILLS <ian704mills@btinternet.com>:

>

> Dear Dr Leonard,

>

> I am replying to your email to Dr Claudine Thomas of 28 April
> reproduced below. The membership of the CCU is available on the BIPM
> website, and although I am not going to list the email addresses of
> all those who will be attending the next meeting you could surely
> obtain the addresses for yourself with a bit of work using google.

>

> The CCU is a Consultative Committee of the CIPM. The responsibility
> of the CCU is to advise the CIPM on all matters relating to the SI.
> Possible revisions to the definitions of the base units of the SI is
> one of our responsibilities. Such changes are extensively discussed,
> taking advice from many other Consultative Committees and other
> expert bodies. Any advice that the CCU gives is expressed along with
> any reservations that may be presented at our meetings, but in
> general the advice that we give to the CIPM represents view of the
> overwhelming majority of the CCU meetings.

>

> Sincerely, Ian Mills

>

> =====

> Ian Mills FRS

> President of the CCU

> School of Chemistry

> University of Reading

> Reading RG6 6AD, U.K.

>

>