

Niobium for Aluminium Cast Parts in Automotive Components

The Royal Society of Chemistry
13th July 2016



WELCOME AND INTRODUCTION

Dr Naila Croft

International Coordinator of the Charles Hatchett Award

Today's Programme:

- **A seminar recognising Niobium for Aluminium Cast Parts in Automotive Components**

INCLUDING

- **Presentation of the 2016 Charles Hatchett Award winning paper**

A FEW WORDS OF HOUSEKEEPING.....

- **Safety - Fire Alarm**
- **Guest packs / Agenda for the day**
- **Coffee / Lunch**
- **Questions or comments on the presentations**
- **Mobile phones OFF, please!**

Companhia Brasileira de Metalurgia e Mineração

CBMM: World leader in niobium technology



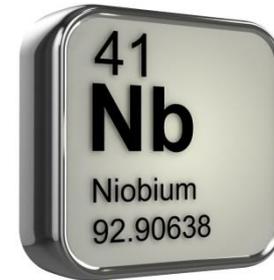
Sponsors of the Charles Hatchett Award since 1979

Niobium: Solutions for a sustainable future



CHARLES HATCHETT AWARD

Niobium - 1801



IOM3 Award

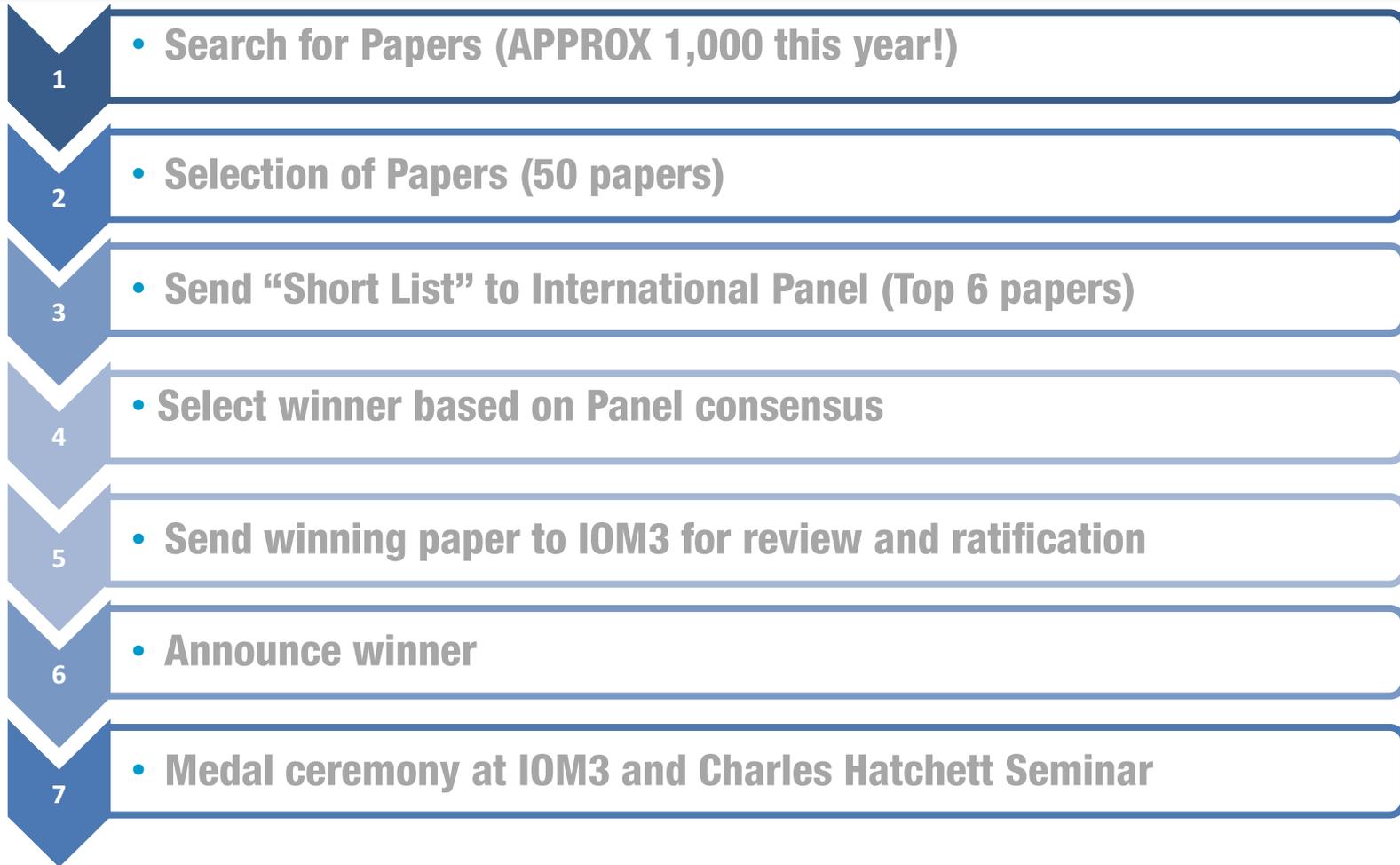


Awarded annually to the best publication on the science and technology of niobium

www.charles-hatchett.com

CHARLES HATCHETT SEMINAR 2016

PROCESS OVERVIEW FOR CHARLES HATCHETT 2016



CHARLES HATCHETT SEMINAR 2016

2016 AWARD WINNING AUTHORS

N. Hari Babu, M. Nowak and L. Bolzoni

Grain refinement of Al-Si Alloys by Nb-B inoculation.

- Part I: Concept development and effect on binary alloy**
- Part II: Application to commercial alloys**



CURRENT INTERNATIONAL PANEL

- **Dr. Kisoo Kim**, POSCO Technical Research Laboratories, **South Korea**
- **Prof. Oscar Balancin**, Universidade Federal de São Carlos, **Brazil**
- **Dr. Hani Henein**, University of Alberta, **Canada**
- **Dr. Isabel Gutiérrez**, CEIT - Materials Department, **Spain**
- **Prof. Indradev Samajdar**, Indian Institute of Technology Bombay, **India**
- **Mr Alan Denney**, AKD Materials Consulting Ltd, **UK**



MEDAL TABLE – 2016 AWARD

 US		8
 JP		7
 DE		6
 UK	 ← 2016	5
 CA		3
 FR ES		2
 CN KR BR		1

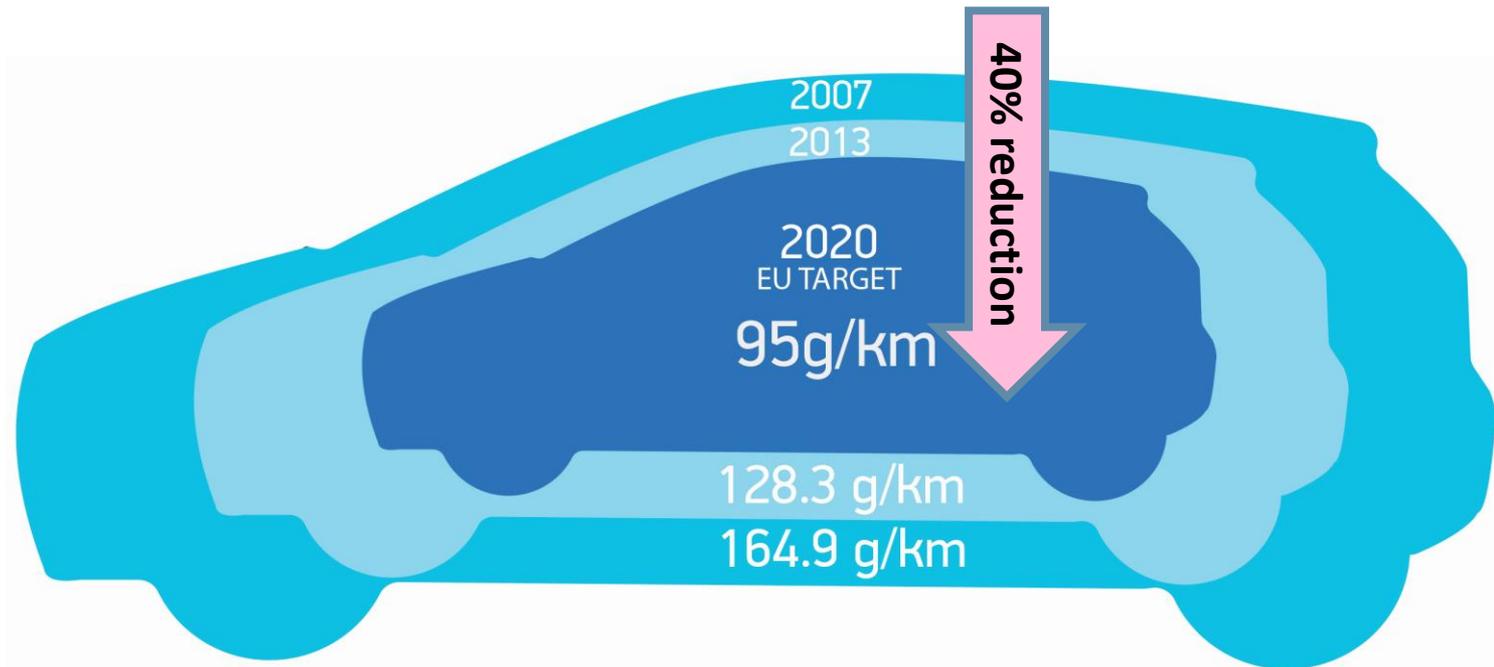
UN Sustainable Development Goals for 2030



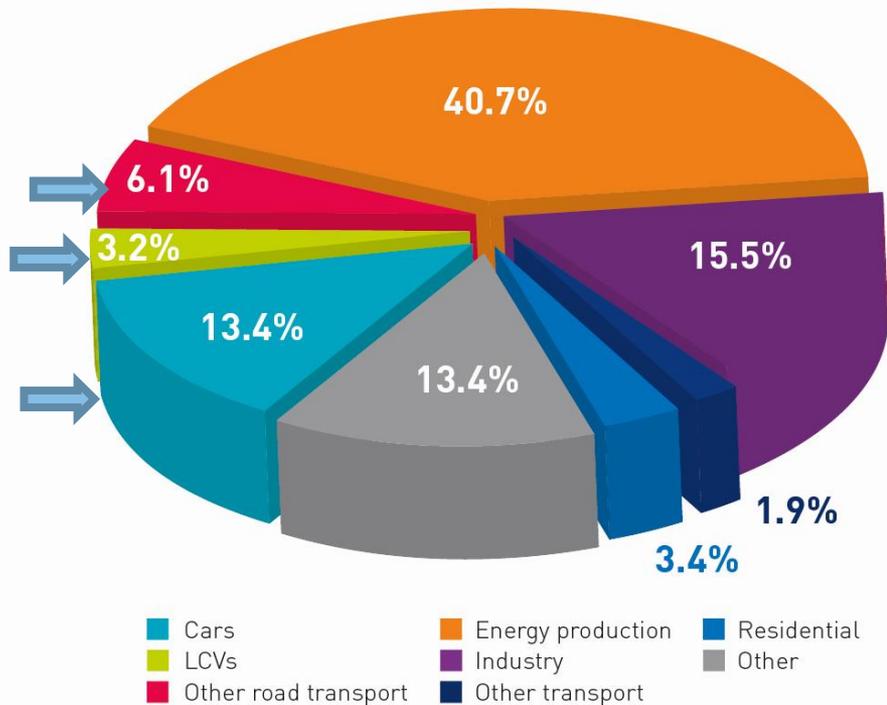
<p>1 NO POVERTY</p>	<p>2 ZERO HUNGER</p>	<p>3 GOOD HEALTH AND WELL-BEING</p>	<p>4 QUALITY EDUCATION</p>	<p>5 GENDER EQUALITY</p>	<p>6 CLEAN WATER AND SANITATION</p>
<p>7 AFFORDABLE AND CLEAN ENERGY</p>	<p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<p>10 REDUCED INEQUALITIES</p>	<p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	<p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>
<p>13 CLIMATE ACTION</p>	<p>14 LIFE BELOW WATER</p>	<p>15 LIFE ON LAND</p>	<p>16 PEACE, JUSTICE AND STRONG INSTITUTIONS</p>	<p>17 PARTNERSHIPS FOR THE GOALS</p>	<p>SUSTAINABLE DEVELOPMENT GOALS</p>



EU CO₂ Emissions targets and performance



Sustainable Development Goals



Energy production is the major source of greenhouse gas emissions

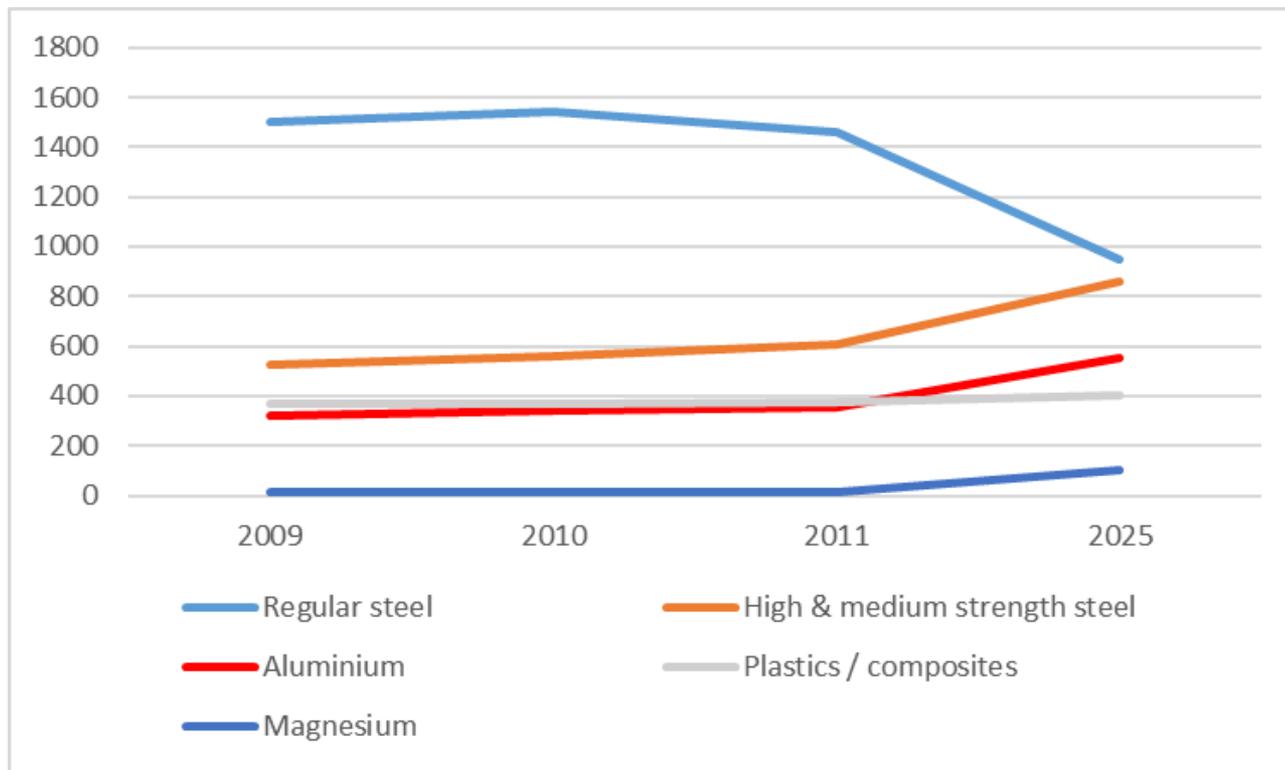
Road transport is responsible for 22.7% emissions

Cars are responsible for 13.4% of emissions

VEHICLE LIGHTWEIGHTING IN NORTH AMERICA

(source American Chemistry Council, Ducker Worldwide and Henkel)

- The average vehicle will be 400 pounds lighter by 2025
- Average materials content of North American light vehicles (pound/vehicle)



AGENDA

09.15	Assemble, Coffee	Library, The Royal Society of Chemistry
09.30	Opening Remarks	Naila Croft (Chair), Beta Technology, UK
09.45	Opportunities for Aluminium Components in Automotive Applications	Jesse Wili Paegle Filho, JWP Engineering & Consulting, Brazil
10.15	The Charles Hatchett Award 2016 Lecture: 'Grain Refinement of Al-Si Alloys by Nb-B Inoculation. Part 1: Concept Development and Effect on Binary Alloys. Part 2: Application to Commercial Alloys'	Hari-Babu Nadendla, Brunel University London, UK
11.00	Coffee	
11.30	Light-weighting Gravity Cast Parts in the Automotive Industry	Jack Strong, Grainger and Worrall, UK
12.00	The Master Alloy of Al-Nb-B	Edmundo Burgos, CBMM, Brazil
12.30	Aluminium Niobium – A Foundry and Master Alloy Manufacturer's Perspective	Henry Dickinson, Norton Aluminium, UK
13.00	Discussion/Concluding Remarks	Marcos Stuart, CBMM, Brazil
13.15	Lunch	