http://www.cuneyttas.com

http://scholar.google.com/citations?user=VegI5ywAAAAJ&hl=en&oi=ao

A. Cuneyt Tas, *Ph.D.*

July 23, 2017

1993: PhD in Ceramic Engineering (*Iowa State, USA*)
06/'93-11/'97: Assistant Professor (*METU, Turkey*)
11/'97-01/'02: Associate Professor (*METU*)
02/'99-02/'01: Visiting Professor (*Max-Planck-Institut*)
09/'01-04/'03: Senior Staff Scientist (*Merck, Germany*)
05/'03-04/'06: Research Prof. (*Clemson Univ., USA*)
05/'06-11/'06: Professor (*Mersin University, Turkey*)
11/'06-9/'10: Professor (*Yeditepe University, Turkey*)
08/'07-06/'08: Visiting Prof. (*New York Univ, USA*)
9/'10-9/'11: Visiting Prof. (*Univ. of Oklahoma, USA*)
4/'12-6/'15: Res. Scholar (*Univ. of Illinois, USA*)
7/'15-to date: Principal Scientist (*Solidia Techno., USA*)

Publications

Peer-reviewed publications:	71
Google Scholar citations:	4325
h-index: 33	i10-index: 59
Symposium presentations:	126
Book chapters:	34
ICDD X-ray diffraction patterns:	18
Phase diagrams:	2

Patents

US Patents: 4	PCT Patents: 2
European Patents: 4	Canadian Patents: 2
German Patents: 2	French Patent: 1
British Patents: 2	Turkish Patents: 9

Product-on-the-market

"*Calcibon® Granules*": Micro- and macro-porous apatitic, bone-like calcium phosphate spherical granules (*1 to 6 mm in diameter*) used for the clinical repair of bone defects since 2003. These have been the first porous granules ever produced "at room temperature by using a self-setting, orthopedic cement material." Granules were made by Dr. Tas at *Merck Biomaterials GmbH* in Darmstadt, and are currently marketed by *Biomet Europe*. See: http://www.cuneyttas.com/Calcibon-GPS_2_protocol.pdf, US Patent **7,381,262** and *J. Mater. Sci. Mater. Med.*, **19**(5), 2231-2239 (2008).

Awards / Honors

- Elected, *Member*/ International Centre for Diffraction Data (*since May 1997*)
- Faculty Excellence in Teaching Awards (*METU*), 1993, 1999, and 2000 (*3000 USD each + certificate*)
- Max-Planck-Society Scholarship (Feb1999-Feb2001)

Student Advising

- 12 graduate theses supervised & completed (*5 in METU-Turkey, 5 in Clemson Univ.-USA, 2 in Max-Planck-Institut / Germany*),
- >50 undergrads were assigned research projects

Contributions to Inorganic Materials Science

1.) Urea decomposition, catalyzed by its enzyme urease, is a regulated (*in terms of supply*) source of HCO_3^- ions in synthesis solutions. This method was demonstrated to produce $Y(Cr, Co)O_3$, $LaAlO_3$, $Pb(Zr_{0.52}Ti_{0.48})O_3$, Gd-doped $CaZrO_3$, Sr- and Zn-doped $LaGaO_3$, $GaO(OH)$, Mn-doped $ZnGa_2O_4$ (*Patent No: EP 1 227 139*), $CaCO_3$, and "biomimetic" calcium phosphates.

2.) Synthetic body fluids (SBF), mimicking the blood plasma in terms of ion concentrations, can *in situ* form nanosize calcium phosphate (*CaP*) particles. Author has developed a *Tris*-buffered SBF solution back in 1997 (*published in 1999, J. Eur. Ceram. Soc.*) with a HCO_3^- concentration (i.e., 27 mM) exactly equal to that of human plasma. Developed "10xSBF" solution (*J. Mater. Res., 2004*) for "coating" bioinert ceramics, polymers, or metals with a CaP layer to make their surfaces more osteoinductive.

3.) Synthesized carbonated nanopowders (*in bulk quantities*) of calcium phosphates by using an SBF solution (*Biomaterials, 2000*) and/or enzyme-catalyzed biomimetic synthesis at 37°C (*J. Mater. Sci. Lett., 2001*)

4.) Used DMEM cell culture solutions, instead of SBF, to test the *in vitro* biocompatibility of CaP biomaterials & Ti (*Mater. Sci. Eng. C, 2010* and *2014*)

5.) *Tris-* or *Hepes*-free SBF solutions by using Na-lactate and lactic acid pair (*Lac*-SBF) (*Pasinli et al., Acta Biomater.*, 2010 and 2012)

6.) Biphasic CaP synthesis (*J. Am. Ceram. Soc., 1998*)

7.) Hydroxyapatite powders of high thermal stability (*Biomaterials, 2000*), which did not decompose to β-TCP even at 1500°C

8.) Three different methods of synthesizing whiskers (*i.e., single crystals*) of calcium phosphate (*either β-TCP or HA*) biomaterials at <100°C or 1200°C (*J. Am. Ceram. Soc.*, 2001 & 2007 and *J. Mater. Res.*, 2004)

9.) Various self-setting cements for bone defect repair: [1] *J. Mater. Sci. Mater. M.*, **16**, 167-74 (2005), [2] Patent No's: US **6,929,692** & US **7,381,262** [3] *Int. J. Appl. Ceram. Tech.*, **4**, 152-163 (2007)

10.) First monetite ($CaHPO_4$) cement (2005)

11.) "Biconvex micropills" of $CaCO_3$. Such micropills, in any material system, were not possible before this work (US Patent No: **8,470,280**)

12.) Rhenanite ($NaCaPO_4$)-apatite biphasics

13.) "Dumbbell-shaped" brushite ($CaHPO_4{\cdot}2H_2O$) crystals (2010) and brushite micro-granules (2012)

14.) "Calcium metal" to synthesize amorphous calcium phosphate(2012) US patent **9,108,860** (2015)

15.) Amorphous calcium phosphate (ACP) nanospheres formed in DMEM-like (2013) or synthetic body fluid (*Lac*-SBF) solutions (2014)

16.) Nano-CaP of **900 m²/g** BET surface area (2014)

17.) Aragonite is reactive in *Lac*-SBF solutions (2014)

18.) Novel "aragonite coating solutions"(*ACS*) (2015)

19.) Whitlockite synthesis from brushite (2016)