

**Summary of contributions of Dr. A. Cuneyt Tas to the fields of
synthetic bone substitute materials synthesis & processing /
calcium phosphates /
bioceramics /
abiotic mineralization-calcification solution development**

- Chemical synthesis of high purity Ca-hydroxyapatite (HA) or α -TCP or β -TCP powders, [1997](#)
- Chemical synthesis of HA- β -TCP biphasic (20 to 90% HA, with 10% increments) powders, [1998](#)
- Tape casting of HA, [1998](#)
- Manufacture of macroporous HA bioceramics, [1999](#)
- Synthesis of carbonated HA at 37°C in urea-containing synthetic body fluids, [1999](#)
- Synthesis of Mg-doped and carbonated HA in synthetic body fluids at 37°C, [2000](#)
- Synthesis of macroporous β -TCP (β -tricalcium phosphate) bioceramics, [2000](#)
- Dip coating of HA on Ti-6Al-4V substrates without any cracks in the coating after heating, [2000](#)
- Combustion synthesis of ion (Cu, Fe and Zn)-doped calcium phosphate (CaP) powders, [2000](#)
- Synthesis of single crystals of HA, [2001](#)
- Crystallographic analysis of single crystals of HA, [2001](#)
- Formation of HA precursors in synthetic body fluids containing urea and enzyme urease, [2001](#)
- Synthesis of HA or β -TCP or HA+ β -TCP nano-whiskers in an ordinary microwave oven, [2004](#)
- Preparation of macro- and micro-porous CaPs by a simple PVA-processing method, [2004](#)
- Rapid coating of metals, ceramics and polymers with 10X SBF solutions, [2004](#)
- Conversion of brushite ($\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$) into HA in physiological media, [2004](#)
- Development of apatite stable at 1500°C in O₂ atmosphere, [2004](#)
- Formation of apatitic CaP precursors using Na-K-phosphate buffer solutions at 37°C, [2005](#)
- Chemical synthesis of self-setting TTCP (tetracalcium phosphate) powders, [2005](#)
- Chemical surface modification of alumina so that it can then form apatite on it, [2005](#)
- Electroless and rapid deposition of brushite crystals on Ti-6Al-4V at room temperature, [2006](#)
- Osteoblast cell culture on HA or β -TCP or HA+ β -TCP nanowhiskers, [2006](#)
- Effect of carbonate content of physiological media on *in situ*, *in vitro* CaP nucleation, [2006](#)
- Chemical synthesis of bioresorbable rhenanite (β - NaCaPO_4) nanopowders, [2007](#)
- Chemical synthesis of Zn-doped β -TCP powders and follow-up cell culture, [2007](#)
- Osteoblast proliferation on neat or apatitic CaP-coated titanium foams, [2007](#)
- Synthesis of macroporous apatitic CaP+calcite scaffolds by starting with calcite, [2007](#)
- A novel protocol to produce crack-free apatitic CaP coatings on Ti-6Al-4V, [2007](#)
- A novel method to develop a monetite (CaHPO_4) biocement, [2006](#)
- Formation of apatitic CaP nanowhiskers in H₂O₂ solutions at 90°C, [2007](#)
- Use of vaterite (a metastable form of CaCO_3) in forming CaP-based biomedical scaffolds, [2008](#)
- Increasing the surface area of porous collagen membranes by using a simple solution, [2008](#)
- Rendering novel “33% monetite+67% CSH cements” biocompatible *via* a simple solution, [2008](#)
- Production of macroporous Calcibon® granules from a hydraulic CaP cement, [2008](#) (← article)
- Production of macroporous [Calcibon® granules](#) from a hydraulic CaP cement, [2008](#) (← patent)

- A novel hydraulic CaP cement formulation suitable for 3D printing, [2005](#) (← patent)
- Porous CaP granule or morsel production *via* gelatin processing, [2005](#) (← patent)
- Method of preparing self-setting, hydraulic α -TCP powders, [2003](#) (← patent application)
- Monodisperse, monosize vaterite micropills from CaCl_2 -gelatin-urea solutions, [2009](#)
- Monosize vaterite micropills from CaCl_2 -gelatin-urea solutions, [2009](#) (← patent)
- Monetite (CaHPO_4) synthesis in ethanol at RT, [2009](#)
- Brushite to octacalcium phosphate (OCP) transformation in DMEM at 36.5°C , [2010](#)
- Biomimetic CaP synthesis in a Na-lactate/lactic acid-buffered physiological solution, [2010](#)
- Accelerated transf. of brushite to OCP in new abiotic, novel physiological media at 80°C , [2011](#)
- Struvite synthesis and its behavior in abiotic, novel physiological media, [2011](#)
- Synthesis of macro-granules of brushite or OCP from marble, [2011](#)
- From calcium metal to amorphous or cryptocrystalline CaPs, [2012](#) (← article)
- From calcium metal to amorphous or cryptocrystalline CaPs, [2012](#) (← patent)
- *In situ* crystallization of brushite micro-granules in biomineralization media, [2012](#)
- Comparison of titanium surfaces soaked in 5 M NaOH and 5 M KOH solutions, [2013](#)
- Synthesis of Na- and Mg-doped, carbonated apatitic calcium phosphate, [2013](#)
- Amorphous CaP synthesis in an unbuffered and simple biomineralization solution, [2013](#)
- Grade-1 titanium soaked in DMEM solution at 37°C -materials science aspects, [2014](#)
- Monosize, monodisperse spheres of amorphous CaP synthesized in SBF at 55°C , [2014](#)
- Synthesis of K-containing HA microparticles, [2014](#)
- Synthesis of aragonite for using it as a potential additive to self-setting CaP cements, [2014](#)
- Novel aragonite coating solutions (ACS) developed based on artificial seawater, [2015](#)
- Transformation of brushite to whitlockite in simple biomineralization media, [2016](#)
- Use of physiological media or physiologically-relevant solutions in CaP synthesis-Review, [2014](#)
- A. Sieberath, D. Gruhn, A. Wille, K. Yussenko, J. Salber, A. Schnitzbauer, and A. C. Tas, "Calcium Phosphate Nucleation and Deposition in Gelatin-supplemented 10X SBF Solutions" *Journal of Materials Science: Materials in Medicine*, Accepted for Publication/In Print, Manuscript No: JMSM-D-26-00005R3, September 24, 2026.

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