Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Table 1S. Characteristics of samples

Characteristics	**H-Beta**	**NE:Ni/H-Beta**	**NA:V/H-Beta**	**NA:Ag/H-Beta**	**H-ZSM-5**	**NA:Ni/H-ZSM-5**	**NA:V/H-ZSM-5**	**NA:Ag/H-ZSM-5**
Dopant concentration (preparation condition)	-	10 mol.%			-	10 mol.%		
Phase composition	H-Beta (BEA)	~50 % H-Beta + ~10% anatase + ~40% η-phase + HD[1] (Fig. 2a)	~80% H-Beta + 20% anatase + HD[1] (Fig. 2a)	~70% H-Beta + 30% anatase + HD[1] (Fig. 2a)	H-ZSM-5 (MFI)	75% H-ZSM-5 + 25% anatase + HD[1] (Fig. 2b)	80% H-ZSM-5 + 20% anatase (Fig. 2b)	75% H-ZSM-5 + 25% anatase + HD[1] (Fig. 2b)
Average crystallite size of NT[2] (D, nm)	-	η-phase: 3.2(1)	Anatase: 5.2(3)	Anatase: 5.6(3)	-	-	-	-
Unit cell parameters of NT: a^3, Å / c^3, Å / c/a	-	Anatase: 3.792 / 9.546 / ~2.52 η-phase: 3.792 / 22.5 / ~5.93	Anatase: 3.771 / 9.524 / ~2.5	Anatase: 3.787 / 9.539 / ~2.52	-	3.822 / 9.570 / ~2.49	3.770 / 9.527 / ~2.52	3.784 / 9.565 / ~2.53
Band gap energy, Eg, eV	-	2.6	2.8	2.9	-	2.7	2.4	2.9
Specific surface area, S_{BET}, m^2/g	399.5	-[4]	146.3	-[4]	377.3	-[4]	-[4]	-[4]
Particles surface composition (XPS),								
OH, %	18.2	20.1	20.8	23.6	-	25.7	18.3	26.9
Ti^{3+}	-	6.7	5.1	12.2	-	17.6	11.5	13.2
Ni^{2+} / V^{5+} / Ag^+	-	-	- / 4.1 / -	- / - / 3.0	-	- / - / -	- / 1.9 / -	- / - / 1.2
S (in form SO_4^{2-})	-	1.5	1.4	1.4	-	1.6	1.5	1.5
The ROS content (CL data)	-	The content of $^{\bullet}O_2^-$, $^{\bullet}OH$ and H_2O_2 decreases in raw NE:Ni/H-Beta > NA:V/H-Beta > NA:Ag/H-Beta			-	The content of $^{\bullet}O_2^-$, $^{\bullet}OH$ and H_2O_2 decreases in raw NA:Ag/H-ZSM-5 > NA:Ni/H-ZSM-5 > NA:V/H-ZSM-5		

[1] In the calculations of the composition X-ray amorphous hydrated titania (HT) was not taken into account because of its small amount. [2] *D* was determined from the reflection at 2θ~25° for anatase and at 2θ~5° for η-phase; [3] the unit cell parameters were calculated using the 004 and 200 reflections for anatase and the 001 reflection for the η-phase; [4] not measured

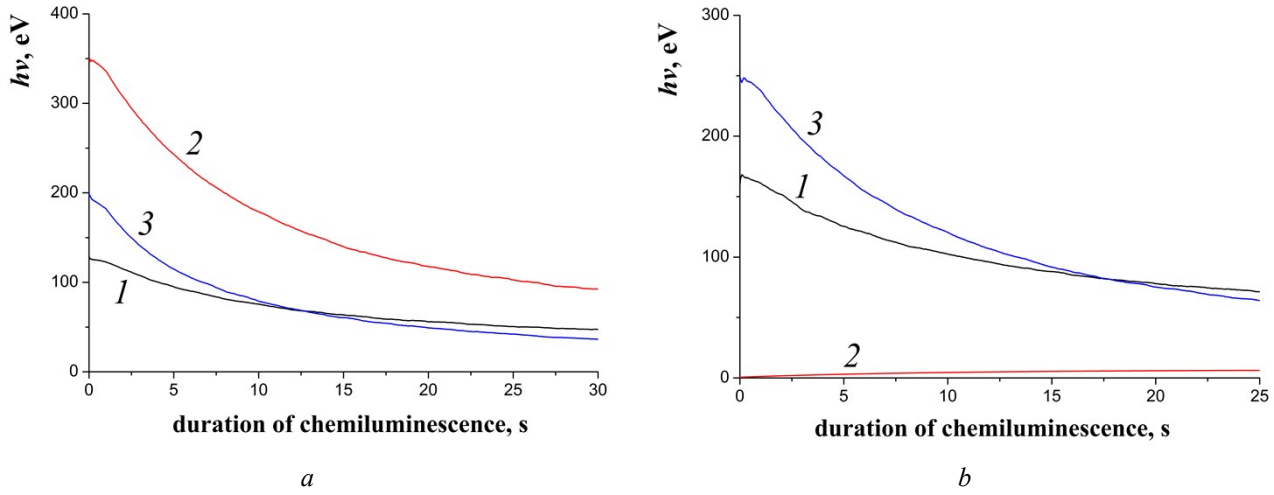

Fig. 1S. The chemiluminescence spectra with **luminol** in the presence of: *a* – NE:Ni/H-Beta (*1*), NA:V/H-Beta (*2*), NA:Ag/H-Beta (*3*); *b* – NA:Ni/H-ZSM-5 (*1*), NA:V/H-ZSM-5 (*2*), NA:Ag/H-ZSM-5 (*3*).

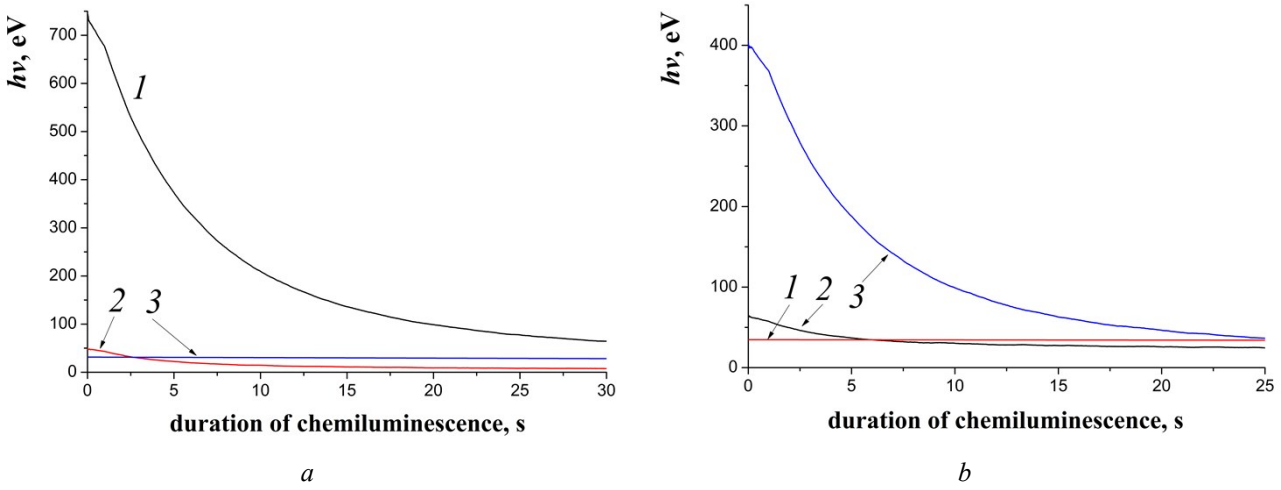

Fig. 2S. The chemiluminescence spectra with **lucigenin** in the presence of: *a* –NE:Ni/H-Beta (*1*), NA:V/H-Beta (*2*), NA:Ag/H-Beta (*3*); *b* – NA:Ni/H-ZSM-5 (*1*), NA:V/H-ZSM-5 (*2*), NA:Ag/H-ZSM-5 (*3*)